JANUARY | 1957

products finishing

FINISHES ON METAL PRODUCTS

Table of Contents	Page 5
Finishes for Fine Cars	Page 22
Accelerated Corrosion Tests	Page 28
Abrasive Belt Polishing	Page 36
Chromium Plating	Page 46
Appliance Finish Requirements	Page 50
What's New?	Page 90

NOT ONE BUT 3 APPROVALS make sure your product finish performs . . . *at both ends of the line!*

Once our laboratory has developed a formulation to meet your product finish problem, a test batch is made and checked for every critical quality. Before filling the order, the production run is checked again against the original formulation. If the material is warehoused, in 30 days it's checked a third time.

These 3 separate checks are but one of the ways Sherwin-Williams makes sure your finish performs *at both ends of the line* — on your production line — and on your product in use.

Similar quality controls on raw materials keep every finish reorder precisely the same as the day it was accepted.

If you manufacture appliances, furniture, metal or wood products of any kind, be sure at both ends of the line! Investigate Sherwin-Williams Product Finishes . . . and benefit from years of experience in methods and systems, too. Call your nearest Sherwin-Williams Representative or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, O. In Canada: 2875 Centre St., Montreal.

SHERWIN-WILLIAMS **INDUSTRIAL FINISHES**

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(THIS CARD VOID AFTER MARCH 1, 1957)

												2nd Cover			3rd Cover			4th Cover	
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2	16	30	44	58	72	86	100	114	128	142	156	169	182	195	208	221	234	247	260
3	17	31	45	59	73	87	101	115	129	143	157	170	183	196	209	222	235	248	261
4	18	32	46	60	74	88	102	116	130	144	158	171	184	197	210	223	236	249	262
5	19	33	47	61	75	89	103	117	131	145	159	172	185	198	211	224	237	250	263
6	20	34	48	62	76	90	104	118	132	146	160	173	186	199	212	225	238	251	264
7	21	35	49	63	77	91	105	119	133	147	161	174	187	200	213	226	239	252	265
8	22	36	50	64	78	92	106	120	134	148	162	175	188	201	214	227	240	253	266
9	23	37	51	65	79	93	107	121	135	149	163	176	189	202	215	228	241	254	267
10	24	38	52	66	80	94	108	122	136	150	164	177	190	203	216	229	242	255	268
11	25	39	53	67	81	95	109	123	137	151	165	178	191	204	217	230	243	256	269
12	26	40	54	68	82	96	110	124	138	152	166	179	192	205	218	231	244	257	270
13	27	41	55	69	83	97	111	125	139	153	167	180	193	206	219	232	245	258	271
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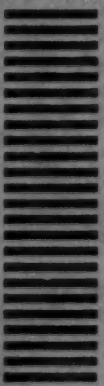

DO YOU NEED ANSWERS TO THESE QUESTIONS?

1. How can I electroclean steel at lower cost?
2. How can I find a brass cleaner that gives better protection against tarnishing?
3. How can I reduce rejects due to faulty electrocleaning of zinc die castings?

***Answer* 1** Following an Oakite recommendation, one plater made a small change in his steel-cleaning cycle and soon had two tankfuls of cleaning solution doing the work of three—and the plate adhesion was improved. *See booklet offered below.*

***Answer* 2** Oakite has a new brass cleaner that provides scientific protection against the oxygen that tarnishes brass and other copper alloys during the application of reverse current. *See booklet offered below.*

***Answer* 3** Oakite has an anodic conditioner that offers brighter plating of zinc die castings . . . with no anodic blackening and fewer rejects. *See booklet offered below.*

FREE For more information about the electrocleaning of steel, brass or zinc die castings, send for one or all of the booklets listed in the coupon.

OAKITE PRODUCTS, INC.
20 Rector Street, New York 6, N. Y.

Send me the free booklets I have checked below:

- ☐ "Four good steps toward better electroplating on steel"
- ☐ "What's NEW for electrocleaning brass and other copper alloys"
- ☐ "Good news about electrocleaning zinc-base die castings"

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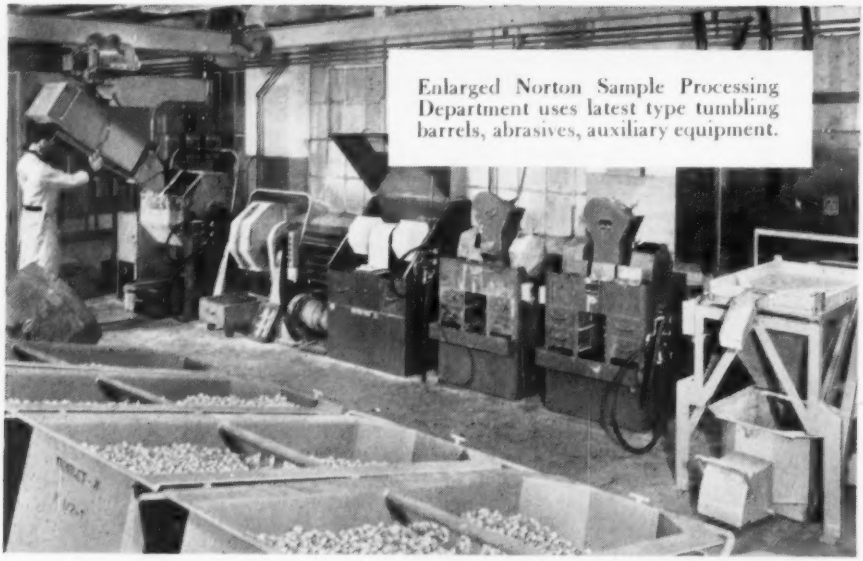

Enlarged Norton Sample Processing Department uses latest type tumbling barrels, abrasives, auxiliary equipment.

See what barrel-finishing can do

If you're still finishing metal parts the long hard way — take a look at what Norton is demonstrating with modern equipment, materials and processes in its newly enlarged Sample Processing Department.

Deburring . . . descaling . . . better color . . . better finish . . . lighter cuts on die castings without cutting under the smooth outside surface — what's your problem?

If you will send us sample parts (and they can range from tiny needles to hefty forgings) Norton production engineers will give you a detailed report on what tumbling will do for you.

What To Send Us

Along with your unfinished parts please forward: (a) a finished sample to be matched (hand-finished if necessary); plus (b) information on your present barrel finishing equipment, if any, including type and size of barrel and speeds. Address the Sales Engineering Dept., Abrasive Division. NORTON COMPANY, Worcester 6, Mass.

G-301

NORTON

ABRASIVES

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to make your products better

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories

BEHR-MANNING DIVISION: Coated Abrasives Sharpening Stones • Pressure-Sensitive Tapes

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Another **H-VW-M** *first!*

POWERTRON GERMANIUM RECTIFIERS

New—Completely new models, new features
Different—No other combination like it
Better—Revolutionary new features
—And all this at a NEW LOW PRICE!*

Check these outstanding H-VW-M features:

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- **No paralleling of junctions—an H-VW-M exclusive**
- **High efficiency of germanium** • **Improved regulation of germanium**
- **44 control positions, from 2 to 12 volts** • **Less than 5% ripple**

This completely new, different, and better line of Powertron Germanium Rectifiers, built with famous H-VW-M quality for long life dependability, are something special in packaged units. If one of these models fits your plating, anodizing or cleaning requirements, then you've got a real bargain. Just look at these low prices.

Immediate delivery. Write for Catalog. **Hanson-Van Winkle-Munning Company, Matawan, New Jersey. Offices in principal cities.**

750 amperes	2-12 volts	42"h x 22"w x 20"d	$ 995.00*
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* PRICES based on 440 volt 3-phase 60-cycle input. 220 volt input slightly higher. F.O.B. Matawan.

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Industry's Workshop for the Finest in Plating, Anodizing, and Polishing Processes • Equipment • Supplies

PLATEMANSHIP—Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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STOCK POINTS:
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WORLD-WIDE DISTRIBUTION
. . . ALSO IN Canada, Brazil, England, France, Sweden and Germany

Since 1930, ENTHONE Incorporated has developed and brought to the metal finishing market many specialty products and processes. Often these products have provided the answers to finishing problems previously unsolved. Enthone ENSTRIPS, for example, are patented products for the selective dissolving of one metal plated on another without attacking the base metal. Perhaps ENSTRIPS — or one of the many other ENTHONE products — can provide the answer to your metal finishing problems. Whatever your needs, ask ENTHONE.

Write for the folder "They are HERE . . . " describing **20** ENTHONE answers to difficult finishing problems.

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Metal Finishing Processes • Electroplating Chemicals

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products finishing

Vol. 21 No. 4 January, 1957

FEATURES IN THIS ISSUE:

21 The Finishing Industry's Target for 1957 • *Editorial*
22 Polishing and Painting Processes Create Fine Car Finishes • *By Ezra A. Blount, Editor*
28 Two New Accelerated Corrosion Tests • *Reported by Ezra A. Blount, Editor*
36 Points to Remember in Using Abrasive Belts for Finishing • *By Warren K. Seward*
46 Chromium Plating Over a Chromate Film . . . A Preliminary Study • *By John E. Hoover*
50 Spotlighting Finishing Progress • *By E. L. Faneuf*
50 —What the Appliance Industry Expects From Finishes
68 Practical Applications of Modern Products
68 —Continuous Strip Galvanizing at Inland Steel • *By Arthur Q. Smith*
74 —Abrasive Wheel Produces Improved Finish on Revolvers
74 —Small Plant Installs Electrostatic Spray
78 —Impervious Graphite Heat Exchanger Used for Both Heating and Cooling Solution
82 —Polyvinyl Chloride Sheets Used in Building Plating Tank
6 Advertising Representatives

DEPARTMENTS:

90 New Equipment, Materials, Processes
130 New Books
134 News of the Industry
151 Meetings of Interest to Finishers
152 Product Literature
157 Opportunity Section
158 The Finishing Touch
160 January Advertisers' Index

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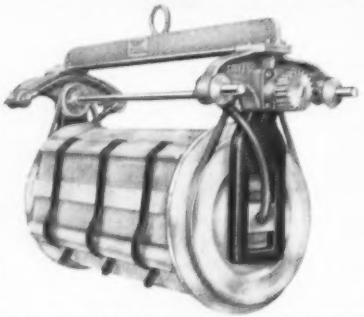

BELT DRIVEN PLATING BARREL

• Low initial cost • LOWEST possible maintenance • No cylinder gears • No cylinder bearings

Greater Current Carrying Capacity Which Lowers Plating Time and Cost

Stutz Belt Drive complete cycle Plating Barrel. This unit incorporates a cylinder of one piece Plexiglas construction, suspended and rotated by two V belts and arranged between cast steel guide frames protected with 5/16" thick special vulcanized hard rubber. For smooth barrel operation, saddle horns are located on 15" centers, 4 provided for maximum current. Cylinder door is heavily reinforced and is locked with vinyl chloride covered spring steel bung clamps. Cathode contactors are dangler type. These units made to fit most makes of plating tanks and furnished also with motor drives mounted directly on cylinder superstructure. Standard sizes 14" x 30" and 14" x 36" (I.D.). 12 additional sizes from 12" x 24" to 16" x 42" (I.D.). Standard perforations 3/32" round 3/16" centers. Patented dual hole for processing of extremely small parts available.

Specially designed counter pulleys of monel metal with deep dimples for positive grip against belt face.

This shows the belt expanding into the dimples of the driving pulleys. This action provides positive pull with no abrasion to the belt whatsoever.

Write for illustrated catalog and prices!

Serving Industry 35 years **GEO. A. STUTZ MFG. CO.**
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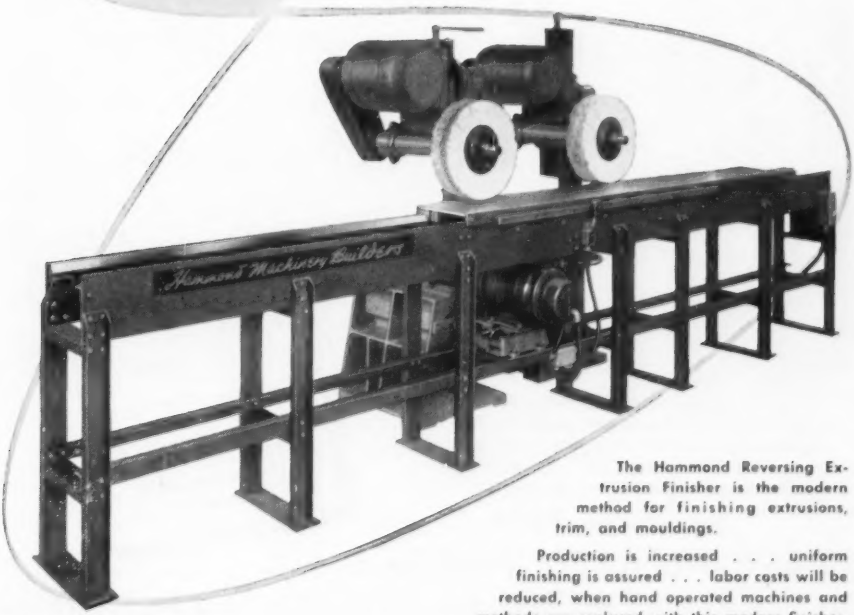
Circulation over 20,000— largest in the finishing field

Hammond
OF KALAMAZOO

REVERSING EXTRUSION FINISHER

for LOW COST, VOLUME PRODUCTION FINISHING OF EXTRUSIONS, TRIM AND MOULDINGS



The Hammond Reversing Extrusion Finisher is the modern method for finishing extrusions, trim, and mouldings.

Production is increased . . . uniform finishing is assured . . . labor costs will be reduced, when hand operated machines and methods are replaced with this modern finisher.

Two-Head Machine shown . . . any number of heads, and length of conveyor, can be supplied to suit your job.

SEND SAMPLES and we will show you how much you can speed up production and cut costs.

Hammond Machinery Builders INC.

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has given
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Photo courtesy Mitchell-Bate Co., Waterbury, Conn.

What's being lowered here?

Costs! With Unichrome Coating 218X, of course!

SAVINGS START soon as users lower racks and baskets into Coating 218X. This approved vinyl plastisol provides insulation that lasts phenomenally long. It withstands toughest plating and cleaning cycles, even vapor degreasing cycles. It won't chip, tear, blister . . . won't contaminate baths. Coast to coast, platers know how it cuts maintenance to the bone, saves most time and money in the end.

If you want a nearby, experienced firm specializing in plastisol application to do the job for you, we'll gladly supply names.

UNICHROME

METAL & THERMIT
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In Canada: Metal & Thermit-United Chromium of Canada, Limited, Rexdale, Ont.

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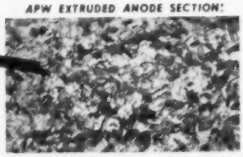
SHAPED, EXTRUDED ANODES

ROLLED FLAT PLATE ANODE SECTION:

This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.

Note small, fully controlled regularity of grain size that promotes uniform corrosion, smoothest electrodeposits, less rejects.

APW EXTRUDED ANODE SECTION:



THE GREATEST ANODE DEVELOPMENT IN YEARS

APW Shaped, Extruded Anodes were developed to extend the useful life of our anodes . . . to assure uniform and consistently smooth electrodeposits . . . to minimize shedding. They accomplish these objectives for our customers day after day—and in addition, *they have helped to lower plating costs!*

The anodes are scientifically shaped to retain 80% of original surface area *after 85% by weight has been plated off!* You get longer anode life, minimized polarization and less silver scrap to be refined.

The APW Extrusion Process* assures small, uniform grain size controlled between definite, ideal limits. Corrosion is smooth, shedding is virtually eliminated, rejects are a comparative rarity.

Be certain the silver you buy in anodes is used most efficiently and economically. Our service department will be glad to develop special anode shapes to meet your particular plating bath conditions. Call or write for a representative, we'll be glad to assist with your anode problems. ★ ★ ★ ★ ★ ★

*Pat. Pending

THE AMERICAN PLATINUM WORKS

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APW

ENGELHARD INDUSTRIES

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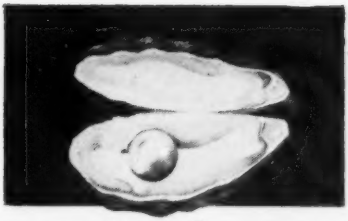

How to add the beauty of **PEARL** *to your finish with* **NACROMER®**

It's easy! Simply by adding a small amount of Nacromer to your regular coating material*, you add a beautiful pearl-like lustre to your finish. The range of effects that can be achieved by also adding transparent pigments or dyes is amazing. For example, it is being used to get beautiful gun metal, gold and silver finishes. It transforms the character of standard colors to achieve unique effects. Nacromer will make a finish that will enhance the beauty of your product . . . increase its sales-appeal!

From a cost viewpoint, Nacromer is practical. You use your present method of application — brush, spray, or dip — without additional labor or equipment required. And, because only a small quantity of Nacromer is necessary, and, the cost of the Nacromer is so low, the added cost is negligible.

Nacromer is versatile, too! You can use Nacromer on practically any material — wood, metal, plastic, leather, and paper are just a few. Nacromer is permanent and safe!

If eye-appeal plays an important role in the sale of your product, you can benefit from the distinctive, different kind of pearl-like finish Nacromer gives. A demonstration sample will show you the difference Nacromer makes on the same kind of material you use — just mail the coupon to get your sample.

**Nacromer is not suitable for use in pigmented enamels, high temperature bake-type synthetic resins containing formaldehyde, or paints. It is suitable for use over these coatings in a clear enamel or lacquer.*

the Mearl corporation

"World's Largest Producers of Pearl Essence"

Waverly Place • New York 14, N. Y.

Please send a demonstration sample of a Nacromer finish on

☐ wood ☐ metal ☐ plastic ☐ other

Name..... Title.....

Company.....

Address.....

City..... State.....

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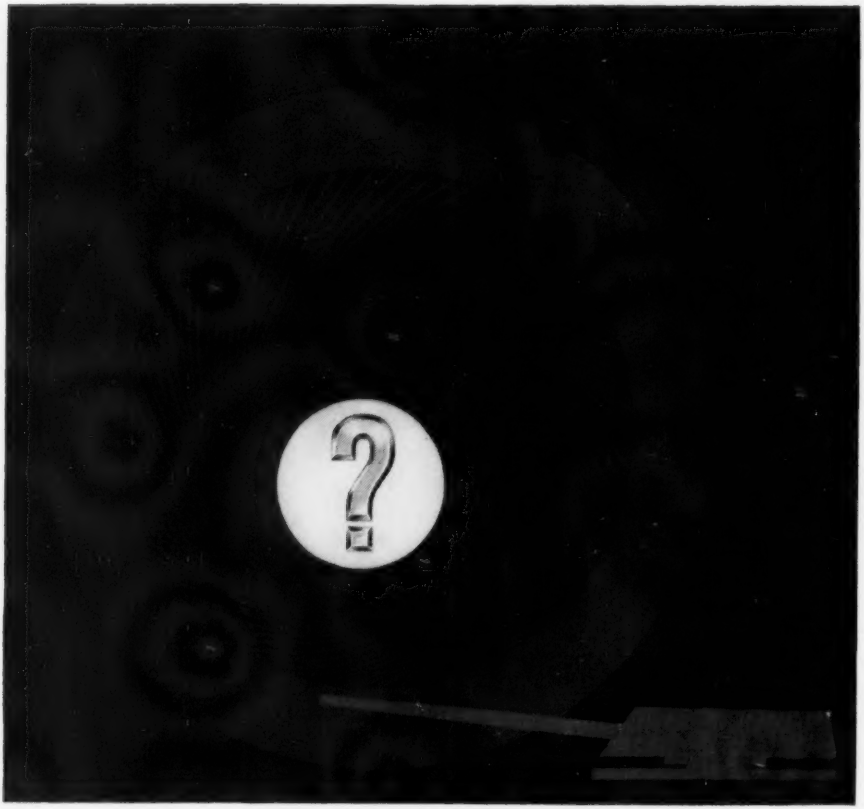

Shoot your chrome questions at Diamond

Let DIAMOND's technical specialists zero in on your chrome-plating problems. These specialists are ready and able to handle your questions—quickly and completely. Their service is free.

In making chromic acid, DIAMOND controls quality from start to finish. DIAMOND experience begins with importing the chrome ore and making the soda ash. It includes *every step* through production and delivery, right up to standing by your side, if you wish, to help you get top-quality plating results consistently, economically.

DIAMOND facilities—two chromic acid plants and nine warehouses and sales offices across the country—assure you uninterrupted supply. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

DIAMOND CHEMICALS

Diamond Chromic Acid

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INTERNATIONAL HARVESTER

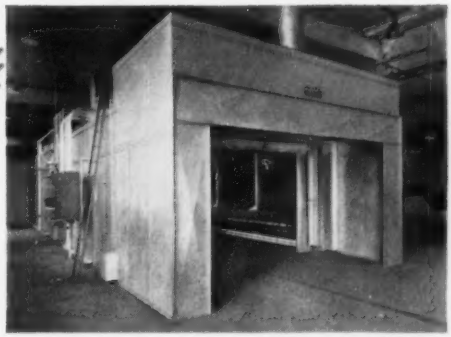
Heavy Equipment Completely Baked in 20 Minutes

These are the results which have made Burdett "Radiant-Heat" Systems the preferred paint drying method for all types of products from toys to heavy duty equipment like the crawler tractor equipment shown here.

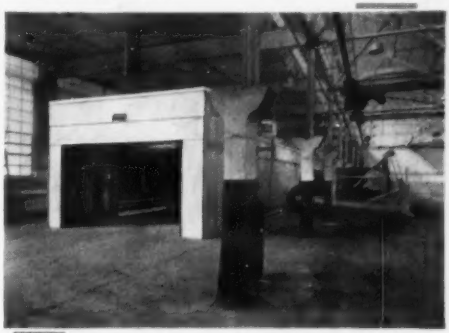
Burdett "Radiant-Heat" Ovens equipped with Model 10L Radi-Heat Line Burners are particularly suited for handling the tougher assignments, such as; tractors, bulldozers, earth movers, trucks, heavy welded fabricated parts, etc. with a remarkable saving in time and fuel, plus the assurance of a better finished product.

Here's why such speed is possible only because the radiant heat which is generated by the Burdett System reaches the metal work with virtually no loss. Baking of the enamel finish is accomplished by the combination of Radiant-Heat and controlled air recirculation. Control equipment for this oven has been specifically designed to meet International Harvester Company and JIC specifications.

Burdett No. 10L "Radi-Heat" Line Burners, as used here, satisfy unlimited applications with a new efficiency and lower cost. They have been known to cut fuel costs as much as 70%, as compared with conventional methods.



• This Burdett System is installed in the International Harvester Company Tractor Works. Enamel finishes are baked on the husky International equipment in 20 minutes time.



Let us send you detailed information on Burdett "Radiant-Heat" Ovens for your finishing department—to convert your existing oven—or for a complete new system.

BURDETT

MANUFACTURING COMPANY

4916 South Monitor Avenue • Chicago 38, Illinois

Detroit Philadelphia New York Cleveland Dallas

Manufacturers of

COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS, AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

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Ask your supplier about *NEW*

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A HOT IDEA FOR COOL PROFITS

THE FINISHING TOUCH

by A. B. HOEFER
Vice-President
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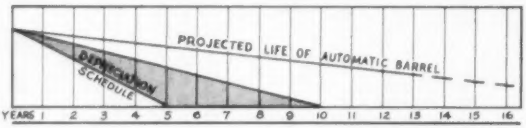
IT'S GOOD TO KNOW WHEN YOU ARE INVESTING in a plating machine that Stevens units can be designed so that more than one type of plating can be done on one machine. Also, that changes can be made in the future to meet any specifications you may have. We've changed over a good number of Stevens machines in our time. That's why there are so many Stevens machines in use far beyond their depreciation schedule.



THERE ARE MANY OTHER SAVINGS you can enjoy beyond long life. Stevens Automatic Barrel machines require only one employee to operate the machine. These units are completely automatic, because the open end barrel is loaded when in a vertical mouth-upward position and automatically unloaded by tilting the barrel downward. There are no lids to fasten or unfasten.

POSSIBLE MIXING OF PARTS IS ELIMINATED in the Stevens automatic barrel. Small, special loads can be conveniently run without penalizing the productive capacity of the machine and without the inconvenience of partitioned cylinders. Stevens Automatic Barrel Machines are used for varied processes that include copper strike; copper, nickel, tin, brass, zinc and cadmium plating; phosphating; alrocing; dichromating; cleaning and bright dipping.

THE SIMPLE COMPACT DESIGN of this machine permits production capacities as high as 4,000 pounds per hour. Simplicity of design makes it equally practical to distribute the capacity between two or more machines to provide flexibility in plating thicknesses and production.

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HOW AUTOMATIC BARREL PLATING CAN REDUCE YOUR HANDLING AND BURDEN COSTS—

Compare this
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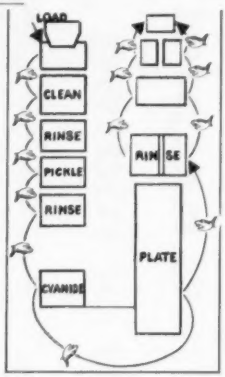
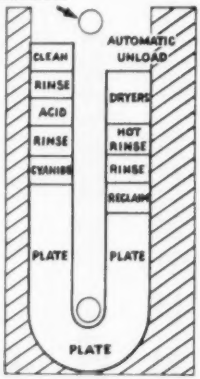


With this
Stevens Automatic Barrel Installation



Production from *both* installations is the same.

Notice how many more handling steps (indicated by the illustrated hands) and manual load-unload operations (indicated by the arrows) are required for the manual set-up.

Notice, too, how much floor space (indicated by shaded area) is saved with a Stevens automatic installation. No manual operations required with automatic load and unload.

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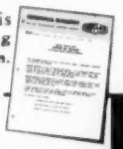

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Cowles CHEMICAL COMPANY
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Vol. 21, No. 4

JANUARY, 1957

. . . . editorial . . . .

The Finishing Industry's Target for 1957

Throughout the years the Finishing Industry has enjoyed a steady growth. Much of the progress that has been made is the result of this industry's alertness in reacting to new trends in finishes brought about by customer demand. It is also a product of the unceasing research that has created new, better finishes to improve product acceptability.

Future technological progress in the Finishing Industry will be spectacular, because the framework for it is firmly established. Today's well-equipped research laboratories staffed with competent technicians will develop the products to assure future industry technical progress at an even more rapid rate than in the past.

Not so well established and effective, however, is the promotion of the Finishing Industry and its improved products and services. The contribution of the finish to the value of the product cannot be stressed too much. Consumers of the finished product must be made aware of the progress that is being made. Consumers must realize that finishing is a job for specialists.

Thus the Finishing Industry's program for progress for the New Year and for many years thereafter must include a stronger public relations effort. Such a public relations program should be designed to increase public appreciation of the role of finishes in product quality; it should enhance public awareness of the technical improvements being made in finishes; and it should educate the public to demand a high quality finish.

This job is one to be shared by the manufacturers of finishes of all kinds, the technical societies concerned with finishing, business associations of job finishers, trade associations, and technical and trade publications.

We of the technical and trade press do everything possible to disseminate information about finishes, their advantages and application techniques. The more people learn about electroplating, anodizing, paint finishing, porcelain enameling, galvanizing and other finishing processes, the greater will be the importance of the Finishing Industry.

Ezra A. Blount

—EDITOR

Polishing and Painting Processes Create Fine Car Finishes

By EZRA A. BLOUNT
Editor

THE BUICK - OLDSMOBILE - PONTIAC ASSEMBLY DIVISION OF GENERAL MOTORS Corporation operates seven assembly plants. One such plant, which began production in December, 1947, is located on a 93-acre site in Doraville, Georgia, approximately 15 miles from Atlanta. Its three main structures — manufacturing and administration buildings and a power house, have 1,381,246 square feet of floor space.

An automobile assembly plant receives parts and sub-assemblies from plants in other parts of the country. Its principal function is to assemble these components into the completed product: an automobile. Such parts and sub-assemblies as engines, wheel rims, tires, body trim, upholstery, electrical systems, frames and body sections are joined, assembled and finished to produce the completed automobile.

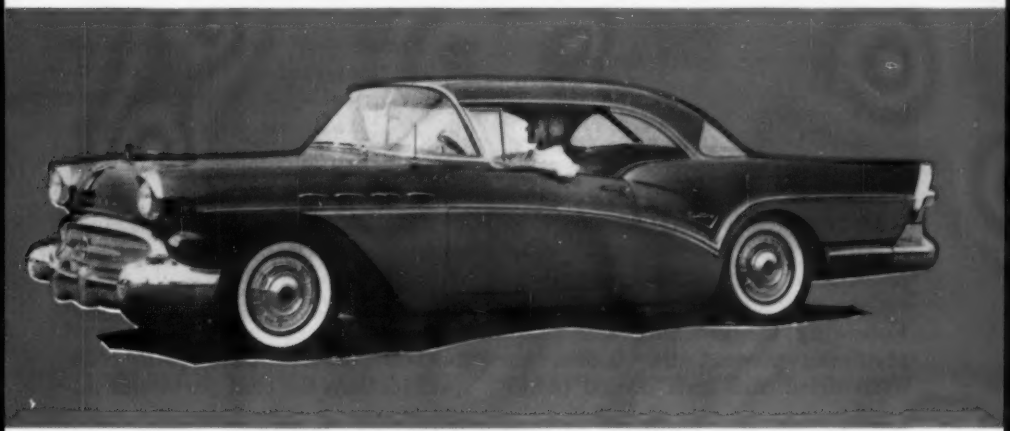
In the Atlanta plant of the Buick-Oldsmobile-Pontiac Assembly Division, three different makes of automobiles are assembled simultaneously on one production line. This creates an intricate scheduling problem. The proper part for each make automobile must arrive at the assembly station where it is to be used at the precise moment of need.

Since there are over 400 possible variations in style and trim for the three cars being assembled here, this is no small task.

Body Assembly and Finishing

Frames and steel body panels arrive at the Atlanta plant ready for joining and assembly. The first step in this process is to weld body side frames and rear fender panels on precision welding fixtures. The welded sub-assembly is then placed on a body-building truck, which carries the floor and rear compartment pans and moves through the body shop on a floor conveyor. Delivery monorails are generally used for carrying body sub-assemblies

General Motors assembly plant demonstrates how to produce three different makes of automobiles with over 400 style and trim variations on the same assembly line. Skillful and efficient polishing, painting and masking create high-quality finishes . . .



This 1957 Buick Century is just one example of the many variations in body, colors and trim produced in a General Motors assembly plant. One such plant is described here.

through the plant. The next step is to place the front end, roof panel, rear compartment, front and shelf assembly and rear end panel onto the body building jig truck and weld them all together to form the body shell. Gas, arc and spot welding are employed in this operation. Seams and junction points are then soldered or caulked.

Using hand files and portable polishing machines fitted with abrasive discs and set-up wheels, metal finishers smooth out all imperfections on the automobile body before it proceeds (Fig. 1). Coated abrasive discs and set-up wheels of 36 to 60-grit emery are used. While these operations are taking place on the body assembly line, hoods and fenders are similarly processed so that they will have the same surface finish as the body. Here the mechanized unit which carries hoods and fenders past metal finishers during polishing is called a "merry-go-round." (Fig. 2).

Set-up wheels used are of the air-cooled buff type. They are prepared by coating with cold polishing wheel cement and then rolled in 100-grit emery, five at a time (Fig. 3).

". . . specially designed metal masks are used to achieve color separation on bodies sprayed in more than one color."

The wheels are then rolled on a metal plate to produce a flat polishing surface, after which they are hung on racks in a Fostoria oven for curing (Fig. 4). The wheels are cured for approximately two hours. They are then ready for the busy finishing lines.

Phosphatizing and Priming

Bodies, hoods and fenders are processed separately in conveyorized five-stage spray phosphatizing machines. These parts are also painted on separate conveyor lines.

Phosphatizing, painting and baking equipment are compactly placed to conserve floor space and time consumed between these operations. Following the cleaning and phosphatizing process, the bodies are oven dried and then cooled before they enter spray booths for application of primer and sealer coats (Fig. 5). After application of primer, bodies are baked in convection-type ovens on the plant balcony. Still on the pallet trucks, they are conveyed to the factory floor, where a wet polishing operation smooths the primer coat before application of the final finish (Fig. 6). Portable rotary disc polishing machines equipped with an open-mesh 400-grit coated-abrasive aluminum-oxide screen mounted on a rubber backing pad are used for this operation.

Finish Coat Application

The bodies are again dried, edges are spray-reinforced, and the first color coat is applied on sections of the body, in accordance with color specifications for that particular au-

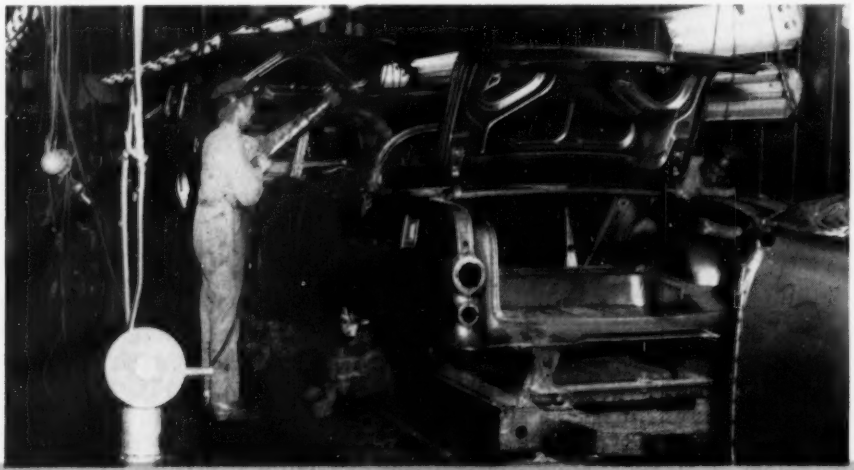


Fig. 1—Using several different types of portable polishing machines fitted with either abrasive discs or set-up wheels, careful operators smooth welded automobile bodies prior to finishing.

tomobile. This step is followed by force drying in body ovens.

Bodies are inspected at this point and those that pass are sprayed with a second coat of lacquer or acrylic lacquer.

Figure 7 shows how masking tape and paper as well as specially designed metal masks are used to achieve color separation on bodies finished in more than one color. Masking tape is applied automatically along one edge of a paper sheet to facilitate attachment of

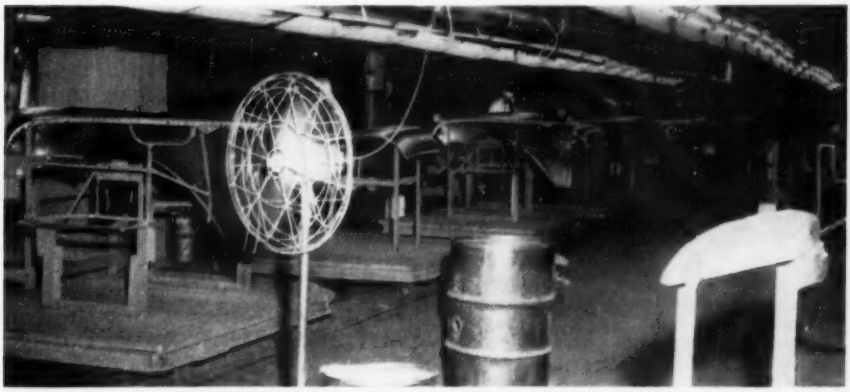


Fig. 2—A view of the metal-finishing "merry-go-round," where hoods and fenders are carried past work stations so that operators can remove imperfections in the base metal.

Fig. 3—Set-up wheels are rolled in emery after coating with polishing wheel cement.

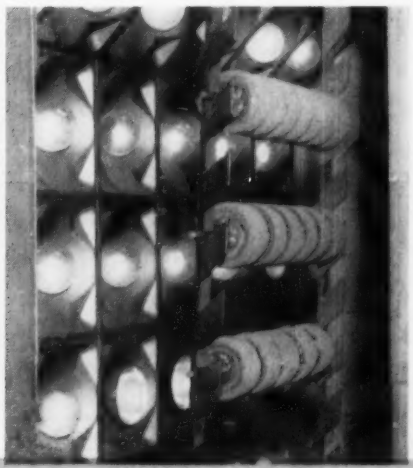


Fig. 4—These banks of portable infrared lamps are used to cure the polishing wheels.

Fig. 5—Cleaned and phosphatized automobile bodies receive spray coat of primer in large, well-ventilated, down-draft spray booth. Air entering booth is filtered to remove dust, prevent imperfections in finish.

paper masking to the body. Using the special metal masking devices it is possible to spray bodies in more than one color without intermediate drying operations. Strippable plastic coatings are used on the metal masks so that they may be cleaned quickly and easily and returned to the paint finishing lines.

Following finish-coat spraying, the bodies are dried in an oven for 30 minutes at 200 deg. F. After cooling, the bodies are polished with a very fine abrasive rubbing compound before being scheduled for assembly.

Hoods and fenders are finished in much the same manner as the bodies. As illustrated in Fig. 8, one difference in handling of these smaller parts is that they are suspended from overhead conveyors,

Fig. 6—Primed, sealed and dried bodies are processed through a wet sanding operation. This produces a smooth surface upon which to apply the final high-gloss paint finish.

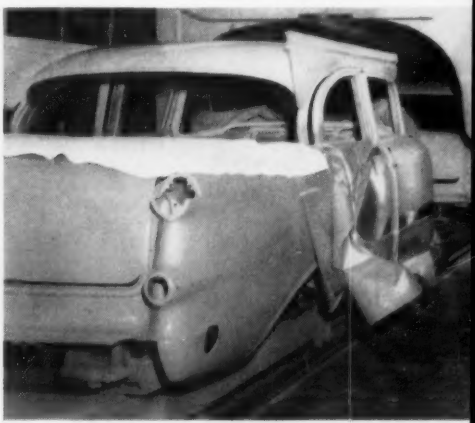


Fig. 7—This auto body has been masked with masking tape and paper and metal masking devices. Body is now ready to enter spray booth for application of the finish coat.

while bodies are conveyed through finishing processes on pallet trucks attached to floor conveyors. Figure 8 also shows how the metal spray painting masks can be used on fenders so that two colors may be applied to the same fender without intermediate drying. The ovens for the hood and fender line are located above the floor level of the factory. This arrangement frees floor space for other uses and keeps heat above the working level.

No axiom in the finishing industry is truer than the following: "the quality of the final finish is dependent upon proper metal surface preparation." In automobile finishing, only skillful, careful polishing and painting processes can create the fine finish demanded on today's automobiles.

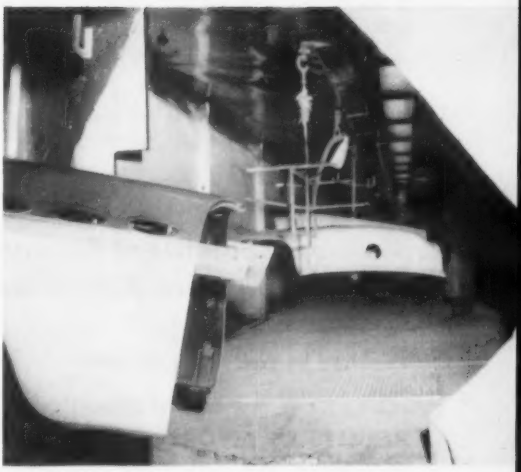


Fig. 8—Fenders and hoods leaving finish-coat spray booth. Fenders in left foreground are fitted with metal masks that allow application of two colors without intermediate drying. (PRODUCTS FINISHING photos.)

★ ★ ★ ★ ★

Electrodeposition of Titanium. Air Force-sponsored development of an effective method for the electrodeposition of titanium is described in a three-part report available through the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. The three volumes are: Part 1—PB 111797, Sept. 1953, 57 pages, $1.50; Part 2—PB 111798, Nov. 1954, 57 pages, $1.50; Part 3—PB 111794, Mar. 1956, 59 pages, $1.50.

The report reviews research by A. W. Schlechten and others at the Missouri School of Mines and Metallurgy for Wright Air Development Center.

In Part 1, numerous experiments on the electrolysis of both fused salt and aqueous systems are reported. A procedure is described which yielded a thin but coherent and corrosion-resistant titanium coating.

Part 2 reports development of a method for obtaining high-content diffusion coatings of titanium by immersing a metal in a fused chloride bath in close proximity to solid plates of titanium or a concentration of titanium powder.

Part 3 describes modification of the coating procedure to a more effective and reproducible process.

★ ★ ★

Analysis and Control of Black Chromium Plating Solutions, by Oren Littig, Rock Island Arsenal, U. S. Army. Available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Price, 50 cents.

Analysis and control of black chromium plating solutions is discussed. Two procedures for analysis of a mixture of chromic and acetic acids were found usable. One technique is a modified steam distillation and subsequent titration with a sodium hydroxide solution. It gives good results for acetic acid but is time-consuming. The other involves potentiometric titration, which gives the per cent of chromium as chromic acid as well as the amount of acetic acid.

Two New Accelerated Corrosion Tests

W. L. Pinner Reports Accomplishments of Research Project No. 15 at Detroit Branch A. E. S. Annual Meeting

Reported by Ezra A. Blount, Editor

RESULTS OF EFFORTS TO MODIFY or replace the salt-spray corrosion test were revealed in several papers presented before the Detroit Branch Annual Technical Session on November 30. More than 200 persons attended the meeting. Howard McAleer, president of the Detroit Branch, presided, and Dr. Samuel Heiman, president of the American Electroplaters' Society, acted as technical chairman. D. J. Thomas served as program chairman.

Theme of the meeting was "Accelerated Corrosion Testing." Speakers were A. Mendizza, W. L. Pinner, and Carl Durbin. Summaries of their papers are given below.

"The Standard Salt Spray Test—Is It a Valid Acceptance Test?"* By A. Mendizza, Bell Telephone Laboratories, Murray Hill, New Jersey.

1. Do we use the salt spray test intelligently?

2. De we interpret the results of the test properly?

*See also: Report on A.S.T.M. Symposium, PRODUCTS FINISHING, April, 1956, page 29.

The paper analyzed results of salt spray tests performed on nickel plated steel and reported previously. Averages of tests showed no correlation and a wide spread in test results. Even worse correlation was shown in the case of nickel plated samples which had received a flash copper plate. There was no evidence of reproducibility in the samples examined (ostensibly duplicates).

Upon submitting these results to statistical analysis, it was reported that the various testing laboratories did not produce consistent results, and that the plated samples did not appear to be consistent.

It appears that the salt spray test, as now practiced, lacks the qualifications of a standard test. To have a standard accelerated service test, it is necessary that uniformity in testing equipment must exist, and that standard samples must be available.

With the present system, there are too many variables for complete reproducibility of the test.

"A Progress Report on the Development of an Accelerated Corrosion Test for Plated Coatings," by

Editor's Note:—The progress made by Mr. Pinner's group shows what can be accomplished by a dynamic, resourceful research program. In three short years this group has, in effect, synthesized a new accelerated corrosion test to replace the salt spray test which has been the standard for 40 years. Equally dramatic is the fact that Mr. Pinner estimates the value of the services and material donated to this effort at $200,-000. Actual cost to the American Electroplaters' Society has been about $500.00.

Walter L. Pinner, Houdaille Industries, Inc., Detroit, Michigan.

Walter Pinner outlined two recommended test procedures which seem to be reproducible, but which may still fail to meet all the necessary requirements for a satisfactory corrosion test. Criteria of a satisfactory test are as follows:

1. Test should disclose existing discontinuities in a plate.
2. Test should create new discontinuities at points of weakness.
3. Results of the test must be reproducible.
4. Test must not be sensitive to temperature, concentration of corrosive chemical, and other conditions.
5. It must be suitable for production parts.

Carl Durbin (right) proceeding to the rostrum to address Detroit Branch, A. E. S. On platform (left to right) are Dr. Samuel Heiman, president of the A. E. S.; Walter L. Pinner, Houdaille Industries, Inc.; A. Mendizza, Bell Telephone Laboratories. At left center (backs to camera) are Howard McAleer, Formax Mfg. Co.; James D. Thomas, General Motors Corp.; H. E. Head, A. E. S. second vice president; Francis T. Eddy, first vice president of the A. E. S. (PRODUCTS FINISHING Staff Photograph.)

". . . there is a great difference between standard production pieces and laboratory test panels."

6. Test must be such that unplated areas do not influence the test results on the plated areas.
7. Test should be such that present, existing test equipment can be used.

The two suggested tests are the Acetic Acid Modification of the Salt Spray Test, and the Corrodkote Test.

The Acetic Acid Test is basically the same as the old salt spray test, but it is a modification of the salt spray test, conducted under certain limitations. The new rules concern the conductance of the test, the test equipment, and the judgment of the results. If these same limitations or "rules" had been used on the old salt spray test, it might have been more useful and more satisfactory. Some of these rules are as follows:

1. All commercial equipment does not guarantee reproducibility of test results.
2. All new test boxes must be checked against seasoned boxes.
3. The materials of construction for testing boxes must be specified.
4. A condensation rate of 2 to 1 is specified, instead of 6 to 1.
5. Exhaust rate and temperature must be specified.
6. A pH of 3.2 must be maintained by additions of acetic acid.
7. Positioning of parts must be specified.
8. Inspection and rating methods must be determined and standardized to be of any value.

The Acetic Acid Test was developed as a test which could be related to the corrosion of plated parts exposed on Detroit streets over one winter. Detroit is a very severe corrosion area in the winter, and represents perhaps the most severe environment which automotive plating must resist.

Results to date indicate that the Acetic Acid Test is reproducible. From a group of 50 pieces, statistics indicates that a sample of 11 pieces is satisfactory. Test results on 11 samples agreed with tests on the 50 pieces. Tests could be reproduced in the same box, in two different boxes, and also in 5 different boxes.

There are still some problems to be solved. One is that there is a great difference between standard production pieces and laboratory test panels. Also, there is no clear-cut decision as to how to get a standard test panel.

The Corrodkote Test

Corrosion occurs when a surface is made wettable and kept wet in a corrosive environment. Samples are rubbed with a corrosive paste to wet the surface.

In the rubbing test, a paste is made of dirt and slush, the surface is made wet, coated with the paste, and placed in a corrosion chamber. The paste formula recommended is called Formula 59, since it was the 59th of 140 paste formulae that were tried.

Formula 59:		
Cupric nitrate	0.035	gm.
Ferric Chloride	0.165	gm.
Ammonium chloride	1.0	gm.
Kaolin	30.0	gm.
Water	50.00	ml.

This formula, rubbed on plated samples which are then placed in a humidity cabinet for 20 hours, appears to produce corrosion which duplicates corrosion experienced on Detroit streets during one winter. Neither 75 or 100 per cent humidity in the cabinet, nor variations in pH, affected the test results.*

Carl Durbin, Chrysler Corp., supplied additional data as a result of Chrysler work on The Corrodkote Test. His figures showed that 20 hours testing produced results that corresponded well to exposure on the Detroit streets over one winter. He showed further that there was correlation between this test and atmospheric corrosion in Florida, Detroit, and Pittsburgh.

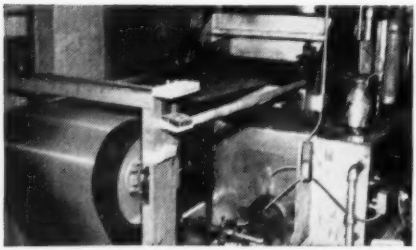
He also presented figures to show the effect of variations in the paste constituents. Rather wide variation in the paste formula showed no effect on test results. Variation in the amount of paste applied to a sample showed some variation in test results. Addition of copper salts to the solution used for the Acetic Acid Test shows promise of reducing the duration of the test from 192 hours to 24 hours.

Walter Pinner invited all interested companies and individuals to use both tests, keep an accurate record of results, and report results to his committee.

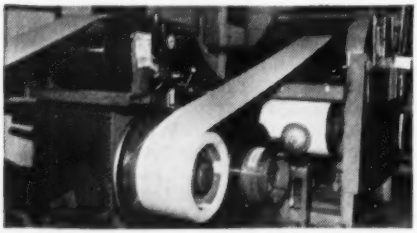
*Much of the same information reported by Mr. Pinner at the Detroit Branch Annual Meeting had been presented before the 43rd Annual Convention of the American Electroplaters' Society.

★ ★ ★

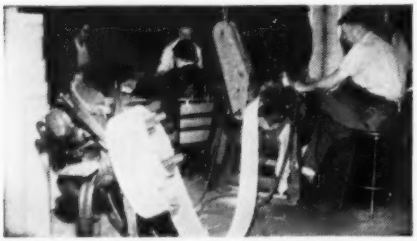
COATED ABRASIVES BELT SPEEDS METALWORKING PRODUCTION. A 27-minute sound-and-color close-up of the newest finishing developments in coated abrasives technology is available to foremen groups, plant production training classes, technical societies and college engineering and trade school groups, on application to: **Dept. FI, Behr-Manning Div., Norton Co.,** Troy, N. Y. The methods, machinery and product applications shown give the viewer an up-to-date problem and solution session. Applications range from off-hand contour and standard lathe work but concentrate mostly on semi-automatic and automatic operations. Work materials include ferrous, non-ferrous and non-metallic; shapes include contour, cylindrical, flat and sheet products.



Strip is re-coiled after its treatment with Bonderite, corrosion resistant paint bond.



Painted metal is slit to desired width and coiled again as it emerges from finishing machine.



Re-coiled, finished metal is cut, formed, and inspected here. No loss of paint adhesion.

Painted stock is fed into punch press for blanking into various shapes and sizes.

Photos courtesy Hastings Aluminum Products, Inc.

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NO LOSS OF PAINT ADHESION!

Here's a production wrinkle that more and more manufacturers are using: Finish metal in the strip, then fabricate the product.

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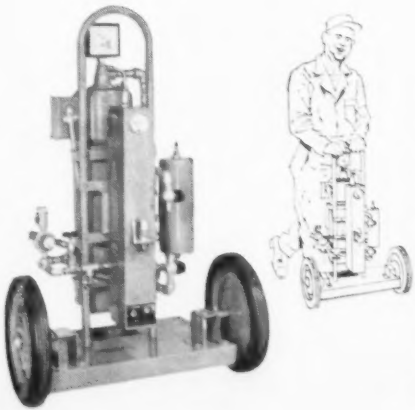

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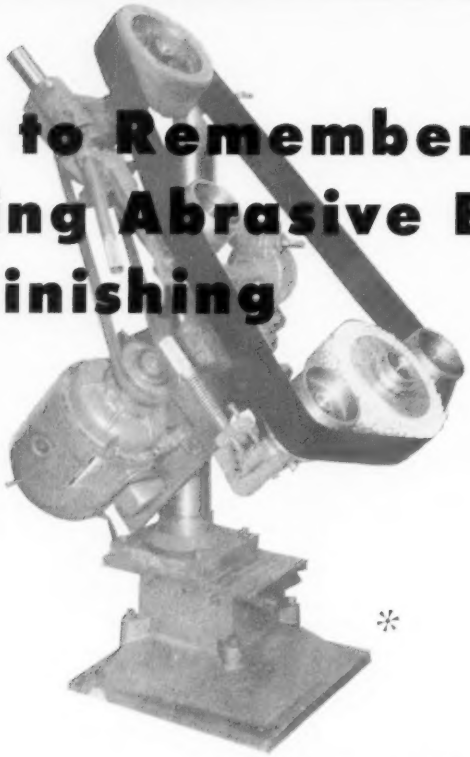
Points to Remember in Using Abrasive Belts for Finishing



By **WARREN K. SEWARD**
Machine & Methods Development Engineer
Coated Abrasives Division
The Carborundum Company
Niagara Falls, New York

There are four basic reasons for the use of abrasives in the grinding and/or finishing of materials machined today: (1) many materials cannot be machined by conventional methods and, consequently, must be ground; (2) required dimensional tolerances often can be obtained only by grinding; (3) a specific surface finish is often necessary to the successful operation of the parts; (4) many times, the eye appeal of consumer products can only be achieved through the use of abrasives. Such finishes are produced by grinding or polishing. The use of abrasive belts as a grinding or polishing medium is the subject of this article.

The Backstand

The backstand idler is a necessary part of an abrasive belt installation. There are two types of backstand idlers — the bench or floor-mounted type and the pedestal-mounted type. The floor type can be mounted on a wall or frame above the polishing lathe when adequate floor space behind is not available. The floor type is usually less expensive and is suitable for practically all types of work.

*Photo used in article heading courtesy Acme Manufacturing Co., Detroit, Mich.

"Where soft and narrow contact wheels are used, the weight of the backstand idler pulley can be an important consideration."

Belt Tracking

Belt tracking can be achieved by one of two methods. In the first and most common method, the belt is tilted into position. This creates a greater tension on one side of the belt than on the other. This system is best suited for tracking belts up to 6 inches wide. The second method is to twist the belt into position and, by so doing, maintain uniform tension across the belt width. This method is the better of the two for belts 7 inches and wider. It is imperative for very wide belts.

Where soft and narrow contact wheels are used, the weight of the backstand idler pulley can be an important consideration. If the pulley is heavy, it may be difficult to get the machine up to operating speed while keeping the belt on the contact wheel. The abrasive belt acts as a drive belt for the idler during starting, and, in overcoming the inertia of the heavy pulley may temporarily deform the soft contact wheel so that the belt will "walk" on the contact wheel. It may even come off completely and possibly damage the belt. A lightweight pulley minimizes this. Jogging the starting switch—rapidly on and off — also will be found very helpful.

The Curtis Machine Corporation, Jamestown, N. Y., has recently introduced a floor-type idler (Fig. 1) made of aluminum castings, with a lightweight pulley. The unit has an idler that is retracted by stepping on a lever which collapses the tension spring, and thus leaves both hands of the operator free to change belts. A belt change can be made in seconds.

Tracking Difficulties

Occasionally, tracking difficulties may be caused by a soft contact wheel being operated at a higher speed than that for which it was dressed. This causes the unsupported edges of the wheel to "throw-out" or expand more than the center, due to centrifugal force. The effect is that the belt cannot be centered on the wheel, and will overhang one side or the other. This condition can be corrected on the machine, by wrapping a new piece of abrasive (approximately 50-120

Fig. 1—Curtis Machine backstand idler has foot pedal for belt tension release, leaving both hands free for changing abrasive belts.

grit) around a piece of wood and holding it lightly against the wheel face while running — thus dressing off the high edges so that the face of the wheel is perfectly flat or very slightly crowned.

Floor mounting the idler is very often a necessity when using soft contact wheels for contour polishing. The low position of a floor mount gives the belt a hundred degrees or more of wrap on the contact wheel before it contacts the workpiece. This prevents the belt "walking" away from the pressure of the workpiece when the soft wheel deforms or collapses at the point of contact. If the belt does not remain centered, it may damage the contact wheel.

Special Designs

Some applications require a special machine or setup, which is usually made by the user. In such cases, the machine should be designed so that the contact wheel is the powered or driving wheel wherever possible. An abrasive belt is not intended for transmitting power, although this is sometimes necessary.

Safety

Abrasive belts are safe in practically all applications. Belt breakage is a rare thing. Although belt setups without guards, other than spark deflectors, pass the safety code of some plants — where foot traffic does not come close to backstand idlers—normal, approved safety precautions should be observed at all times. Eye protection should be worn at all

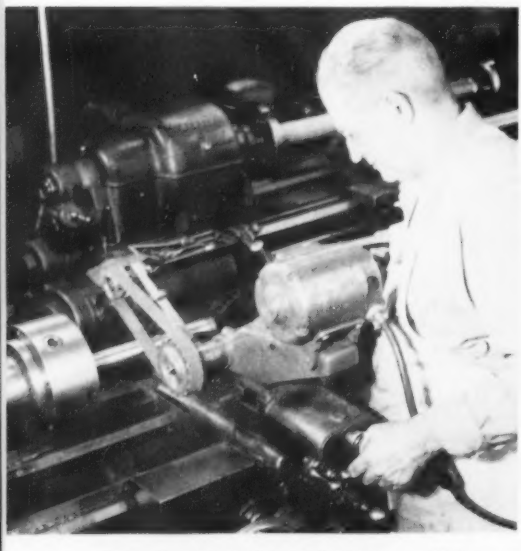


Fig. 2—Curtis Adapt-A-Belt, mounted on a lathe, being used to polish outer diameters. Machine is versatile, performs many tasks.

Fig. 3—Narrow-width abrasive belt being used for polishing small fixture with complicated contours, using slack of belt technique.

times. Most contact wheels are capable of operating safely at speeds far in excess of normal grinding and polishing speeds. Truly, safety is a big factor in abrasive belts.

Belt Widths

For average conditions, it is false economy to use belts wider than necessary to do the job. If a 3-inch belt will work satisfactorily, use a 3-inch and not a 4-inch belt. It is an unusual operator who will make full use of a belt which is wider than necessary. Usually, only the center portion of the belt is used.

Coolants and Lubricants

The use of grinding and machining oils for the lubrication of abrasive belts is common practice. Just as there are "heavy duty" lubricants for reducing friction and prolonging life in machinery, there are equivalent heavy duty oils for use on belts. These are particularly useful when using the coarser grits—namely, 24-60 (for use on roughing operations). It is usually worth while to consult a specialist for lubricant recommendations.

It is possible to make your own heavy duty oil by the addition of E. P. (extreme pressure) additives to regular cutting oil. These are available as concentrates from many suppliers. One such E.P. concentrate that works well with coarse grit abrasives is "Wax-Cut No. 122," made by S. C. Johnson and Sons, Inc., Racine, Wis. Proportions are 1 part No. 122 to 15-20 parts of oil.

Many belt operations are wet—that is, either a chemical or soluble oil concentrate is diluted with water

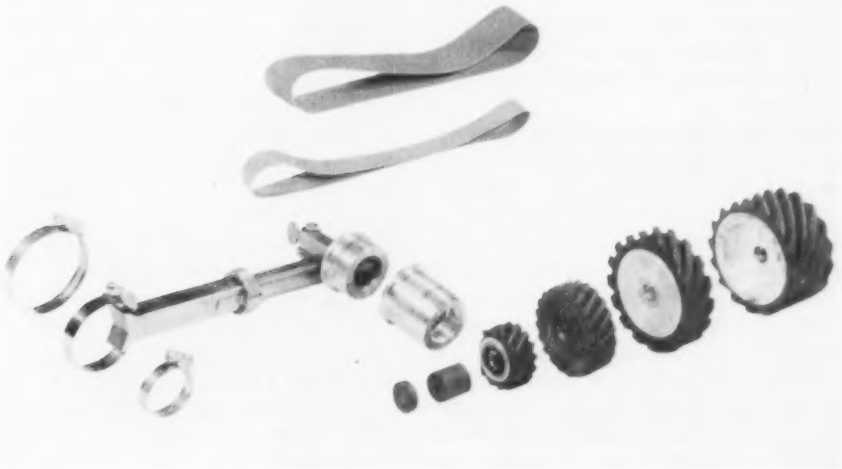


Fig. 4—Components of Curtis Adapt-A-Belt, which can be used to assemble various abrasive belt setups, one of which is shown being used to polish outer diameters in Fig. 2. (Photographs are courtesy The Carborundum Company, Niagara Falls, New York.)

"The use of a lightweight oil in place of water for coolant is well suited to zinc and aluminum die castings . . ."

for use as a coolant or lubricant. A wet operation is usually necessary when the heat of grinding may burn or warp the workpiece, load the belt with abraded particles and chips, or produce undesirable changes in the properties of the material when overheated. In almost all cases where water-type coolants are used, it is necessary to use a premium-type waterproof abrasive cloth. For many applications, wet operation provides a greater safety factor than is necessary from the standpoint of permissible heat generated. In such cases, it is possible to use a lightweight oil in place of water for the coolant. It is then possible to use a lower-priced non-waterproof abrasive belt. In addition, it permits a selection of bond types in the non-waterproof articles, one or more of which may actually outproduce the premium-priced belts. Another bonus is the production of a better finish with the same grit size.

The use of lightweight oil in place of water for coolant is well suited to zinc and aluminum die castings, many types of steel, brass, copper, soft bronzes, and is particularly suitable for stainless steel in the 300 and 400 series. If the oil does not provide sufficient cooling capacity, an additional modification may make it successful: the use of a fine mist of water (with rust inhibitors added) directed at the workpiece. The oil flow is reduced so that it contacts as little of the part as possible—other than the area of contact between the part and the abrasive. Since the atomized water has a large surface area, the cooling capacity of this method of cooling is sometimes greater than that of a flood of water.

The oil imparts a protective coating to the belt against damage by the water mist, and gives the benefits of wet grinding with the economy of dry grinding. This method gives best results on parts having thin sections, such as jet engine blades.

Dressing Belts

Dressing grinding wheels is common practice. On the other hand, too few people know that abrasive belts can be dressed in much the same manner as grinding wheels. Greatest benefits are obtained where surfacing work is done against flat steel platens. The throw-away point of the belt occurs when the abrasive grains contacting the work become dull and glazed and stop cutting. The judicious use of a star-type dresser will cause the dull grains to break down or break completely out of the bond, thereby exposing new, sharp abrasive. This works best on the coarser grits from 24-80. Increases in abrasive life and stock removal of 50 to 75 per cent have been obtained.

Relatively little success has been experienced in dressing belts which run over contact wheels. When properly fitted to the job, flexing of the contact wheel itself helps to keep new, sharp abrasives exposed. The Desmond-Stephen Mfg. Co. of Urbana, Ohio, has developed a star dresser (Model No. BCA-4) for use with belts. They have developed

others, of the rotary wire brush type, which work very well for removing the loaded particles from belts on a dry operation.

Belt Flexibility

Coated abrasive material, as it comes from the coating machines, has little use in industry "as is," because of stiffness and brittleness. In addition to stabilizing and conditioning the material, it must be flexed so that it can be handled and fabricated into belts and other articles. The degree of flexibility which the material receives is generally dependent upon its end use.

There are three types of flex with three degrees of flexibility in each type. In order of increasing flexibility, they are—the 90 flex, which is controlled cracking 90 degrees to the direction of travel of the belt; 45 flex, which is done 45 degrees each way to the direction of travel; and, full flex, which combines the first two. The degree of flexibility is controlled by the size and shape of bar used, as well as the tension used in drawing the material over the bars.

Different types of work require different degrees of flexibility. In practically all types of work, the material having the least flexibility necessary to the job will invariably give the fastest cut and longest belt life —other things being equal. The notable exception is found on some platen applications where additional flexing will weaken the bond sufficiently to give greater breakdown, and consequently, greater mileage.

Conveyorized Finishing

Through-feed or conveyorized feed machines are used extensively for finishing flat work at a high rate of production. On this type of setup, parts are loaded at one end by the operator, pass under the abrasive belt head or heads (if a multiple unit machine) and emerge finished at the other. Many parts can be dropped into a tote-box, but in some cases, they must be removed and stacked to protect the finish.

The type of conveyor generally employed is an endless rubber belt, which has the advantage of being resilient enough to accommodate slightly warped or bent pieces without difficulty. However, this same characteristic is a disadvantage when finishing short pieces, because they are tipped, due to the grinding pressure, and consequently, the edges are dubbed or rounded off

"Be careful there, boss, I think that chair is . . . . yep, it's wet."

Table I

STARTING RECOMMENDATIONS FOR ABRASIVE BELT FINISHING

Roughing or Cutting Down

	Steel and Stainless Steel	Aluminum (All Types)	Tough Bronzes	Brass, Copper, Soft Bronzes	Cast Iron
Grain Type	Aluminum Oxide	Silicon Carbide	Aluminum Oxide	Silicon Carbide	Aluminum Oxide
Grit Range	24-60	24-60	24-60	24-60	24-50
Belt Speed (s.f.p.m.)	6000-8000	6500-7500	6000-8000	5500-7000	5000-6500
Contact Wheel and Density	Serrated Rubber 70-90 Durometer	Serrated Rubber 70-90 Durometer	Serrated Rubber 70-90 Durometer	Serrated Rubber 60-90 Durometer	Serrated Rubber 70-100 Durometer

Polishing

	Steel and Stainless Steel	Aluminum (All Types)	Tough Bronzes	Brass, Copper, Soft Bronzes	Die Castings	Cast Iron
Grain Type	Aluminum Oxide (Silicon Carbide for stainless*)	Aluminum Oxide (Silicon Carbide for brighter polished surface)	Aluminum Oxide	Silicon Carbide	Aluminum Oxide (Silicon Carbide for brighter polished surface)	Silicon Carbide
Grit Range	80-180	80-180	80-180	80-180	80-180	60-120
Belt Speed (s.f.p.m.)	6000-7500	6000-7500	6000-7500	5000-6500	5500-7500	4500-6000
Contact Wheel and Density	Rubber—Plain or Serrated 20-60 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-60 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-60 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-60 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-60 Durometer; Compressed canvas buff type—solid or sectional	Serrated Rubber 20-60 Durometer

* For special finishes on some stainless steel per industry standards.

Finishing

Finishing

	Steel and Stainless Steel	Aluminum (All Types)	Tough Bronzes	Brass, Copper, Soft Bronzes	Die Castings	Cast Iron
Grain Type	Aluminum Oxide (Silicon Carbide for stainless*)	Aluminum Oxide (Silicon Carbide for brighter polished surface)	Aluminum Oxide	Silicon Carbide	Aluminum Oxide (Silicon Carbide for brighter polished surface)	Silicon Carbide
Grit Range	180-500	180-500	180-500	180-500	180-500	150-240
Belt Speed (s.f.p.m.)	5500-7000	5000-6000	5500-7000	4500-6000	5500-7000	4500-6000
Contact Wheel and Density	Rubber—Plain or Serrated 20-30 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-30 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-30 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-30 Durometer; Compressed canvas buff type—solid or sectional	Rubber—Plain or Serrated 20-30 Durometer; Compressed canvas buff type—solid or sectional	Serrated Rubber 20-30 Durometer

* For special finishes on some stainless steel per industry standards.

when they contact the abrasive belt, and again when the part breaks contact with the belt.

This dubbing condition on short pieces can be overcome by the simple expediency of substituting an abrasive belt for the rubber conveyor belt. On many parts, a satisfactory finish for a gasket surface can be produced by using this method. A 120 or 150 grit belt is usually used for this purpose. It does not mar the surface it contacts (if this side has previously been finished) because the abrasive acts as a slip-proof surface, and no relative motion takes place between the abrasive belt and the workpiece.

Selection of Grit Sizes

In all grinding and finishing operations, use the coarsest grit size that will satisfy the requirements. A coarser grit will invariably give a faster rate of cut—and usually, longer life. However, where a buffing operation follows the polishing operation, it may prove more economical to use a finer grit for the final polish, so that the buffing time may be reduced. There is a double saving here—first, the labor cost per piece is reduced, and second, less buffing compound is used, because the polish marks are easier to remove. Experience has shown that a buffing wheel consumes from 1 to 3 times its own cost in compound used during its useful life. Savings made here are usually significant.

Abrasive Buffs

Recently, Sectional Impregnated Abrasive Buffs have been developed by The Carborundum Company for buffing ferrous and nonferrous metals. In many instances these buffs

eliminate cakes and compounds used with non-impregnated buffs. In the finer grit sizes, these pleated-type abrasive buffs can be used for normal cut-down operations to prepare surfaces for color buffing or plating —or both. In the coarser grit sizes, they are used on many of the same jobs as set-up wheels, coated abrasive belts and other polishing and buffing devices.

Finishing Stainless Steel

Stainless steel is used extensively in many industries, especially for food and dairy machinery. It is an established fact that aluminum oxide cuts stainless steel faster than silicon carbide. It is also an established fact, but not as well known, that silicon carbide produces a finer, smoother finish on stainless steel than does aluminum oxide, when the same grit size is used. Where it is necessary to use 240 to 320 grit aluminum oxide to achieve the required finish, it will be found that 180 to 220 silicon carbide will usually give the same micro finish, with a more uniform and smoother scratch, which will buff out easier.

When using the same general type of abrasive commodity, (all glue, all resin, and so on) silicon carbide will give satisfactory life when used for finishing. It will produce a finish with a slight bluish cast, which has eye appeal for articles requiring a polished surface. Except in rare cases, the belts should always be lubricated when polishing stainless steel, to avoid loading.

"There! Is that plain enough now?"

Finishing Nonferrous Metals

On most nonferrous metals, silicon carbide will cut faster than aluminum oxide, particularly in the range from 24-80 grit. Finer grains than this, though, show little difference in the rate of cut between the two. There is an advantage in using aluminum oxide because it usually, but not always, gives a finer finish and longer life. For all nonferrous metals, a low melting point belt grease or other suitable lubricant is a must. The lubricant must be applied at regular intervals to prevent loading and maintain a uniform finish without tear or drag marks. In all finishing operations where the belts are lubricated, care should be exercised to keep dirt and foreign matter from loading the belt. Otherwise, unsightly drag marks result, which are difficult to buff out.

Die castings and permanent mold

castings of nonferrous metals usually can be polished in one operation using 180-240 grit belts. The grit used is dependent upon the amount and size of the flash or imperfections to be removed or blended, and also upon the kind of contact wheel used. The harder the wheel, the coarser the finish. Flexible J-weight belts are normally used, because most die castings involve many contours.

Small and medium-size sand castings, in an average "as cast" condition, usually can be finished in two polishing operations, using 80-100 grit for the roughing, and 180-220 grit for the finishing. The grit size to be used for finishing extrusions, forgings and stampings must be governed by the condition of the parts.

Converting Machines for Abrasive Belts

Many plants have machine tools which can be used as double-duty machines with coated abrasives, while others can be converted permanently to obtain the advantages of abrasive belts. As an example, several manufacturers have lathe jobs that require the turning of tubing and solid stock to a specified dimension, with a specified finish. Roughing cuts can be done quickly, but a finishing cut usually requires considerably more time.

One solution to this problem is to mount a portable belt grinder or polisher on an extension of the cross slide, so that the polisher is on the backside of the work opposite the operator, and the tool bit is mounted in the tool post, in the conventional manner. The roughing cut is made from tailstock to headstock and, as the tool bit is backed away from the work, the belt unit contacts the work. Thus, polishing is done quickly from headstock to tailstock, without any lost motion. A little imagination and ingenuity will turn up many such opportunities to save time and money.

★ ★ ★

Handbook of Barrel Finishing—By Ralph F. Enyedy. 255 pages. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. Price, $7.50.

Covers every phase of barrel finishing from cleaning and desluggings to coloring, polishing and burnishing. More than 150 specification sheets provide helpful information for finishing a large variety of metal and plastic parts. Latest developments in equipment, finishing compounds and methods are described in detail. The book also discusses auxiliary handling equipment, chip tumbling, elimination of mars and scratches caused by machining; descaling, and many other topics. The specification sheets include specific recommendations for the type of barrel, chip type, compound type, amount of parts and tumble time.

★ ★ ★

Practical Plant Layout. By Richard Mather. Published by McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y. 363 pages. Price, $12.

This practical how-to-do-it guide covers the essential elements of good plant layout. It explains the four basic phases — location, overall layout, detailed layout plan and installation — and discusses the eight fundamental factors influencing these operations. Day-by-day help is given in clear, complete directions for the practical steps of collecting data, organizing the layout and installing it.

Men responsible for plant layout and those wanting to know more about lay-out planning techniques will find in this book detailed examples, case illustrations and specific pointers for setting up a plan for efficient, economical production.

Chromium Plating Over a Chromate Film

.....A Preliminary Study

By JOHN E. HOOVER
Globe Chemical Company, Inc.

ELECTRODEPOSITED CHROMIUM has two distinct applications as a finishing material. One purpose is to improve the beauty or human appeal of a particular product. Here, bright chrome plate is used as a decorative finish on automobile trim and accessories, kitchen appliances, and other decorative articles. In the second application chromium is used as electroplated metal on machine tools and other surfaces requiring a wear-resistant coating.

To aid in the elimination of porosity existing between chromium plate and its metallic subcoating, a series of experiments has been undertaken, using electrolytically deposited zinc (over steel) and a chromate treatment as a base for subsequent chrome plating.

Chromate films provide additional protection from corrosion in humid and salt-laden atmospheres. The majority of such films are composed of hydrated chrome complex molecules, which form a gelatinous structure. To convert these structures to a more stable form and produce a more durable surface for chrome plating, heat treatment has been undertaken in this experiment, the theory being that this process reduces the higher hydrated chrome complexes found within a chromate surface to a lower state of hydration. The use of such an intermediate surface for chrome plating increases the possibility of forming a chemical bond of the coordinate type between the deposited chromium and the prepared surface.

Experimental

Panel No. 1: Steel panel was given a standard zinc plate from a cyanide bath employing practical cathode current densities. Panel was then given a 20 to 30-second dip in Cronak chromating solution succeeded by a heat treatment at 320 deg. F. for one hour. After cooling to room temperature, the panel was again dipped in Cronak for two minutes. The lower half of the 3 by 7-inch panel was brushed to remove the non-adhering portion of chromate film. Panel was air dried four hours at room temperature.

After a 500-hour salt spray test,

the panel showed little evidence of white zinc salts. Some areas showed white corrosion which was a direct result of galvanic failure caused by red rust drainage from unprotected areas of the base steel. Plating thickness after the chromate treatments did not exceed 0.0003 inch.

Panel No. 2: The panel was given a semi-bright zinc plate of 0.0003 inch followed by a 25-second Cronak dip. Panel was then heat treated at 320 deg. F. for one hour. A chromic acid solution was prepared in which the ratio by weight of CrO_3/H_2SO_4 was 100 to 1. The concentration of the chromic acid bath did not exceed 23 oz./gal.

One end of the 3 by 7-inch panel was plated at a cathode current density of 150 amp./sq. ft. for several minutes; then the current density was increased to 400 amp./sq. ft. Resulting plate had a smooth gray texture. During the plating process, a tin-lead anode was employed at a distance of four inches from the cathode. The ratio of anode to cathode area was 1 to 1. (All plating was done in circular glass beakers.) The opposite surface of this panel was given a low current density plate in the identical chrome bath for a period of several minutes. The coverage obtained in the short plating cycle did not completely hide the base chromate surface as the gray-white chrome crystals building on the chromate film resulted in a speckled pattern.

After 150 hours of salt spray exposure, the gray chrome showed no evidence of general failure, although some existence of white salts was found on the surface. Small areas up to $\frac{1}{8}$ inch in diameter of exposed base steel were evident af-

Summary

A preliminary study of the chrome plating process over a heat treated chromate film has been made by the author. Some of the findings of this experimentation are encouraging, but they should not be accepted as conclusive evidence that the process has any practical application. The work performed and presented in this paper is merely an introductory study. Additional research along with expansion of those ideas presented in the primary methods is necessary before any definite evaluation can be given.

The work performed at this writing can be summarized as follows:

1. The heat treatment of chromate films (Cronak) on electroplated zinc produces a surface which can be given a coating of chromium plate.

2. The chrome plating obtained will give various degrees of protection in salt-laden atmospheres. The length of exposure before corrosion to the base metal varied from 150 to 450 hours in a salt spray cabinet.

3. Humidity tests were performed on the chrome plated panels, and a maximum of 2,660 hours exposure was obtained during one experiment before small blisters were observed. The humidity room conditions were maintained at 100 per cent humidity and 110 deg. F. throughout the test periods.

"The plate continued to give good protection in some areas where the surface chrome did not flake . . ."

ter 240 hours salt spray exposure. The opposite surface plated at low current density showed some white salts after 240 hours in salt spray, but there was no flaking or general plate failure.

Panel No. 3: This panel was zinc plated to a thickness of approximately 0.0003 inch in a standard cyanide zinc bath. After a 20-second dip in Cronak, it was heat treated at 320 deg. F. for one hour. The panel showed white rust before a 24-hour salt spray test was completed. After 100 hours of salt spray exposure, failure amounted to 100 per cent of the area exposed.

Panel No. 4: Steel panels were given a zinc plate of approximately 0.0001 inch followed by an acid bright dip. No preliminary chromate film was used in this process. After the acid bright dip, chrome plating was performed in a solution with a maximum concentration of 26 oz./gal. of CrO_3. The resulting chrome plate was gray in appearance. After 24 hours exposure in a salt spray cabinet, one panel showed white corrosion on the gray surface. Both panels showed white corrosion products and exposure of the base steel after 90 hours in the salt chamber.

Panel No. 5: In this particular experiment, the panel was given the standard zinc plate at production current densities from a cyanide bath. This was followed by an acid bright dip, cold water rinse, and then a Cronak surface treatment. After a 300 deg. F. heat treatment for one hour, the panel was given a second chromate dip followed by an air dry.

Chrome plating was performed at a bath concentration of 13 oz./gal. CrO_3. The plating time on one surface was 20 minutes at 72 amp./sq. ft. The opposite surface of the identical panel was plated at 144 amp./sq. ft. A white to semi-bright plate was obtained on both surfaces. Both chrome plated areas had an iridescense which was not too pronounced but contained most of the spectral colors. Blisters occurred and were concentrated in specific areas. They were typical of those resulting from poor cleaning prior to zinc plating.

After 120 hours in the salt spray chamber, green stains could be found on both sides of the plated panel. Several areas on either side in which the iridescense was more pronounced showed no indication of green salts. At the completion of 288 hours salt spray test, the base steel was exposed in the high current density areas. The plate continued to give good protection in some areas where the surface chrome did not flake after 450 hours in the salt cabinet.

Panel No. 6: Panel was given a cyanide zinc plate to a thickness ranging from 0.0003 to 0.0004 inch. An acid bright dip (½ per cent nitric acid) was followed by a 20-second Cronak treatment. After blowing dry with air, the panel was heat treated at a temperature rang-

"After completion of an 888-hour humidity test, no visible corrosion was evident."

ing from 325 to 340 deg. F. for a period of one hour.

Chrome plating followed at a solution concentration of 26 oz./gal. Initial current density was 58 amp./sq. ft. and the time was 7 minutes. Plating was continued for an additional 17 minutes at 211 amp./sq. ft. The resulting plate, which was smooth in structure and gray-white in color, flaked from the chromate surface on the lower peripheral high current density area.

The panel was subjected to a humidity test at a temperature of 110 deg. F. and 100 per cent relative humidity for a period of 888 hours. No visible corrosion was evident upon completion of the test; nor was there any apparent decrease in the adhesion of the chrome to the chromate surface. The opposite end of the 3 by 7-inch panel was also plated in the 26-oz./gal. chrome solution. Initial plating time was 17 minutes and the current density 115 amp./sq. ft. This was followed by a plate at 76 amp./sq. ft. for a period of 13 minutes. The resulting plate had a smooth texture and the color of metallic mercury.

After completion of an 888-hour humidity test, no visible corrosion was evident. The chrome plate showed no discoloration, flaking, or blistering. This portion of the chrome plated panel was subjected to a temperature of 400 deg. F. for a period of 7 hours. Examination following this test revealed no general plating failures, although there was some flaking in areas within $\frac{1}{8}$ inch of the edge of the panel.

After the heat exposure, the panel was subjected to an additional 100-hour humidity test. Areas of white corrosion appeared throughout the chrome surface. No red rust was evident; but some flaking and small blisters were visible.

Panel No. 7: A 3 by 7-inch steel panel was plated to a thickness of 0.0035 inch in a zinc cyanide bath, given an acid bright dip, and then a Cronak dip for 25 seconds. This was followed by heat treatment at 330 deg. F. for one hour. After cooling to room temperature, the panel was given an additional chromate dip for 120 seconds and then dried at 120 to 130 deg. F. for 30 minutes.

The panel was chrome plated in a 26 oz./gal. bath at a current density of 10 amp./sq. ft. for 10 minutes, after which the current density was increased to 200 amp./sq. ft. and the plating continued for 14 minutes. A smooth mercury-gray plate, lacking any visible defects, resulted from the plating process. After 720 hours in 100 deg. F./100 per cent relative humidity, the chrome plate was in excellent condition; although several dark spots of pin point size were evident. The panel was removed from test after 2,662 hours and examined under a microscope. Some small blisters could be seen, but there was no evidence of white salts or red rust on the chrome plated surface.

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K. L. Fuhrer
Manager, Chemical & Ceramic Research
Whirlpool-Seeger Corp.

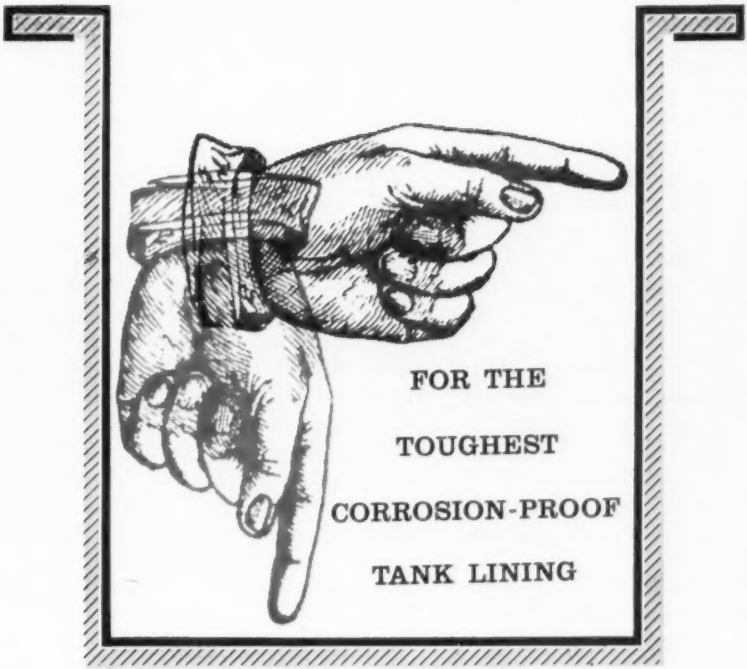
SPOTLIGHTING FINISHING PROGRESS

What the Appliance Industry Expects From Finishes

Before going into the subject of what we expect of finishes in the Appliance Industry, I would like to speak briefly about the major improvements that have been made in the last 25 years in the white appliance field. I say "white appliance field" because with few exceptions white appliances have comprised the major share of the appliances produced. It has been only within the last three or four years that color as an exterior finish has had rather wide acceptance and even today it constitutes less than 20 per cent of the major appliances being marketed.

Most appliances were finished in lacquer 25 years ago. With the advent of alkyd resins a major upgrading in the quality and the field performance of appliance finishes was accomplished. However, not all of the advantages that we enjoy today were immediately achieved. The organic finish manufacturers had to learn as they went along through tedious and painstaking research and pilot production experiments how to evaluate such things as long-oil varnishes versus short-oil varnishes, solvent-to-resin relationships, proper pigment-to-binder ratios, and their effect on the final physical properties desired in a finish, such as adhesion, flexibility, gloss, application properties and many others.

The next important resin development was the ureas, followed by melamines and the most recent resin development, the epoxy resins. Each of these new resins brought the same problems of formulation as the alkyd resins except that now the



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resin portion was an exceedingly complex molecular arrangement, which had to be carefully studied in order to obtain the optimum desired properties.

As we consider the many improvements that organic finish companies have made in the past twenty-five years, we in the Appliance Industry feel indebted to these companies for their continued research which has provided us with improved finishes for our products. Without these improvements we could not look forward to expanding markets for our products, but would be faced with loss of markets due to a lessened public acceptance of our appliances.

While we all recognize that many improvements have been made, we also recognize that our present finishes have their limitations. I would like to discuss some of these.

Color Stability in the Field

How many of you have seen a repair or tried to make a repair of an enamel finish on an appliance after it has been in the home for one, two, or more years? If the touch-up material matched the original color of the appliance it probably would not match the appliance at the time it is repaired. The longer the appliance has been in the user's home the more unlikely it is that the touch-up will match, thus creating a difficult repair job. However, if the original color of the appliance did not change over the normal life span of the appliance, this problem would not exist.

Color Stability in the Manufacturing Plant

While all appliance manufacturers are concerned about color matching in the field, they are also concerned about color variations occurring in their manufacturing plants. This variation may be due to over-baking the enamel, underbaking the enamel, reaching too high a peak temperature in the baking cycle or to the baking atmosphere being contaminated due to improper gas-air mixtures. The control of these variations rests with each individual plant; nevertheless the organic finishing materials should provide a maximum resistance against over-baking, high peak temperatures, or improper gas-air mixtures affecting the finished color or other physical properties of the baked finish. Since most appliance manufacturers do not have indirectly heated ovens, but usually have direct-fired gas ovens, the ratio of burned gas fumes to fresh air makeup will vary, depending on wind direction and velocity, damper duct adjustment, and exhaust fan efficiency. Unless the baking ovens are of such length that the finishes can be baked for 40 to 60 minutes, the temperatures required to obtain optimum protection and satisfactory performance characteristics will, of necessity, approach peak temperatures which will cause an increased tendency toward yellowing of the finish.

Color Stability at Elevated Usage Temperatures

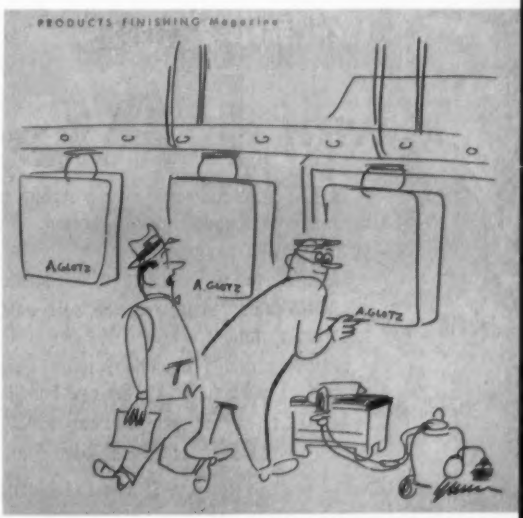
This problem arises in the normal use of ranges and dryers, where, with the exception of some formulas

based on silicones, the organic finishing materials fall short of providing a satisfactory and acceptable finish. Discoloration and loss of original physical properties because of the prolonged exposure to high temperatures occurs too often. The problem of permanent color stability is one which the porcelain enamel industry has long cited as one of their strong points when compared to organic finishes. It behooves the technical personnel of the finishing companies to ask themselves how they can reduce this disadvantage or eliminate it without sacrificing the other desirable properties of organic finishes.

Next let us consider three closely related finish characteristics: mar resistance, scuff resistance, and chip resistance. These properties are desirable in all finishes and the greater the resistance to marring, scuffing and chipping, the more satisfactory and acceptable is the finish. When porcelain enamel finishes are compared to organic finishes we find that they are considerably superior in mar resistance and scuff resistance. On the question of chip resistance we must examine the type of impact or striking forces hitting the surface. Usually light blows over limited areas will only cause nicks or small chips in the organic finish and will not affect the porcelain enamel surface. With heavier blows or impacts over large areas the porcelain enamel usually chips and the organic finish remains satisfactory.

Stain and Grease Resistance

The next two areas where our present finishing materials need to be improved are stain resistance and grease resistance. Those of you who have examined refrigerators in areas of high humidity and high temperatures, such as New Orleans, Galveston and Miami, have probably seen grease spalling and softening of the enamel in the area of the door handle. In many instances the primer and enamel has been completely removed and bare rusted steel is visible. The use of modified epoxy primers has overcome this condition to a great extent, but there still exists the discoloration and yellowing which occurs from absorption of grease fumes by the enamel. Staining of the surface by such things as lipstick, mustard and soft drinks, as well as plasticizer migration caused by extended contact with rubber or plastic parts, indicate certain weaknesses in our present organic finishes. Where a



"Alright, Rembrandt — here we don't sign our artistic creations."

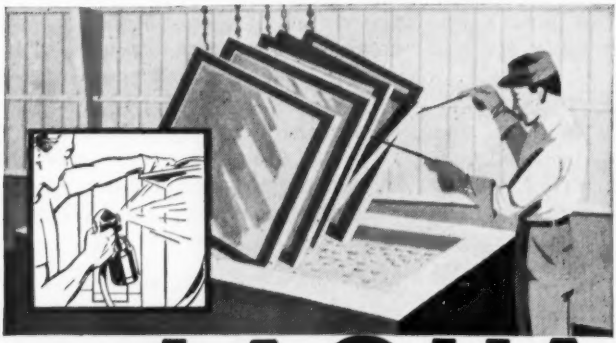
porcelain enamel finish is used, this problem of staining and grease failure is entirely eliminated.

Alkali and Abrasion Resistance

In the home laundry field our present highest quality organic finishing materials leave something to be desired in alkali resistance and abrasion resistance. For that reason, practically all spinner baskets and tubs in automatic washers are finished in porcelain enamel. An equally high percentage of tubs used in conventional washers are porcelain enameled. Organic finishes are still predominately used for gas and electric dryers, although the present organic finishes should be improved to withstand the competitive advantages of porcelain enamels in abrasion resistance.

In the last few years, the porcelain enamel frit manufacturers have developed low-temperature porcelain enamels to such a point that many of the problems of metal distortion and warping that occurred during firing have been overcome. In addition, these low-temperature enamels no longer require premium-priced enameling iron, but can be used on cold-rolled and hot-rolled sheets. While the abrasion resistance

preserve and protect chemically-cleaned and electroplated surfaces by dip or spray



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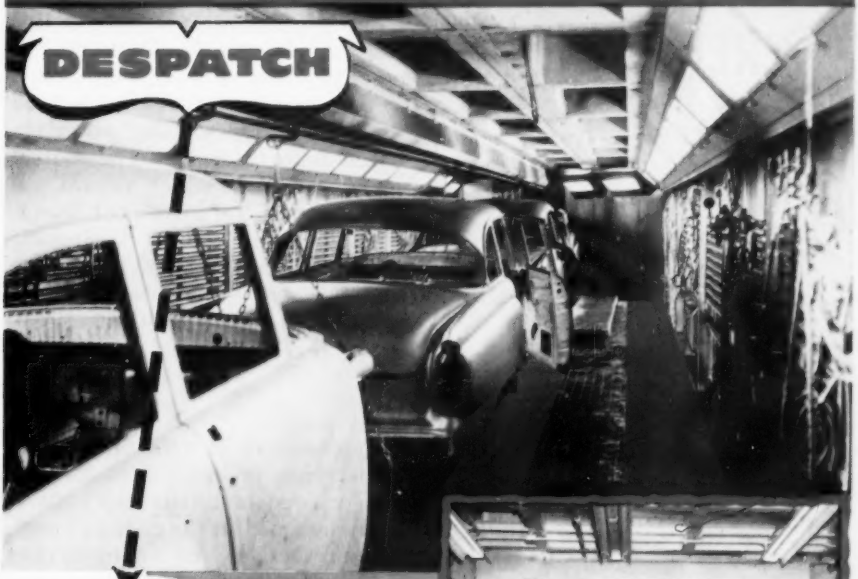

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of low-temperature enamels is less than enamels fired between 1470 and 1550 deg. F., it is still better than our best available organic finishing materials. The porcelain enamel industry has also developed several processes which permit the application of the cover coat directly on the metal, thus eliminating the ground coat and reducing the cost. Examples of these one-coat systems are Parker Pre-Namel 410, Inland Steel Ti-Namel and Armco Uni-vit.

Corrosion

The problem of field failure due to corrosion of appliances finished with organic materials has considerably lessened in the past 15 years, not only because of improvements in the organic finishing materials, but because of improved methods of application and better painting and baking facilities. Better training of personnel, not only in application but in establishing higher and better quality-control standards in the final products has also lessened this problem. Nevertheless, there have been field failures, mostly in high humidity and high-temperature areas, or in coastal areas where there is high concentration of salt in the atmosphere.

Another type of corrosion failure which is encountered is under-film corrosion, sometimes known as filaform corrosion, where the finishing system is raised up from the base metal in a worm-track pattern. This kind of failure is usually found in areas where the relative humidity is

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between 60 and 90 per cent. Also necessary for this type of failure is the presence of some contamination, such as hard water salts, deposited in the phosphate coating.

Usually filaform corrosion will be seen in porous areas in the organic films or where the film thickness is below normal. While baked primer-baked enamel organic finishing systems are less susceptible to this type of failure than the all-enamel paint systems, we still find failures of each system occurring.

Evaluation of Organic Finishing Materials

Instead of trying to cover the many variations in testing procedures and final product performances required by different appliance manufacturers, I feel you might be interested in knowing how the home laundry section of the Whirlpool - Seeger Corporation evaluates organic finishing materials. In this section we have three operational divisions: The St. Joseph, Michigan, division, which manufactures automatic washers and gas and electric dryers; the Clyde, Ohio, division, which manufactures conventional washers, automatic washers, and ironers; and the Marion,

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Ohio, division, which manufactures gas and electric dryers.

In each of these divisions we have a group of product engineering and advanced development laboratories. One of these laboratories handles the evaluation of organic finishing materials. Since several laboratories are involved in this evaluation work, it is necessary to make sure the testing methods used by all divisions are the same, the equipment required identical, and the manual evaluation of the test results comparable.

To facilitate this, the organic finishing group in the chemistry section of the research and development laboratories in St. Joseph, Michigan, spear-headed the work of coordinating these activities. Numerous meetings were held between divisional engineering personnel, and research and development personnel before a temporary set of specifications and testing procedures were agreed upon. The next step was to ask the vendors of the organic finishing materials and the phosphatizing materials to have their technical people review and offer criticism of these proposals as well as advise us whether or not their materials would meet the proposed specifications. After their suggestions were received, our personnel reviewed them and made certain changes to make the specifications more realistic and workable.

I would like to give you an idea of the scope of our specifications

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The above illustrations show Miccrosol being used as a coating: At the left, Miccrosol Spray S-2003 is being applied to a large plating tank. At the right, Miccrosol E-1003 has been applied by dipping this large paddle. Contact us for the name of the qualified Miccrosol coater nearest you.

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For tanks, ducts, and other equipment

MICHIGAN CHROME *and Chemical Company*

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PROCESSED LIMESTONE HONING CHIPS
are excellent for producing a super fine finish on non-ferrous metals.

PROCESSED RED GRANITE ABRASIVE CHIPS
are exceptionally well suited for developing a fast cut on ferrous metals.

CHIPS IN 16 SIZES

FREE CATALOG AND CHIP SAMPLES FOR COMPARISON.

SAMPLE PARTS PROCESSED
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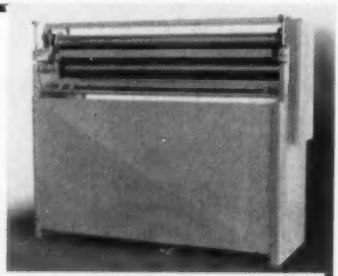

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- **SPEEDS PRODUCTION!**
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- **SAVES UP TO 50% ON COATING MATERIALS!**

Now . . . economical production coating of cardboard, metal, plastics, and similar materials. For complete information, write

Cincinnati **SCREEN PROCESS SUPPLIES, INC.**
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and test methods as applied to the primers and enamels used on our washers and dryers. The first group of requirements covers test procedures and minimum standards for:

Preparation of test panels.
Viscosity of finishing materials.
Hiding power of materials.
Weight per gallon.
Total solids.

Our performance tests:

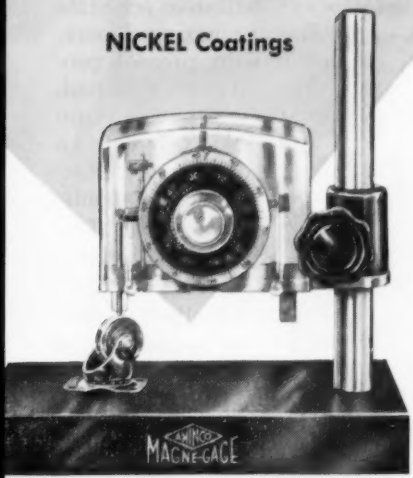
Hardness.
Abrasion resistance.
Detergent immersion resistance.
Humidity resistance.
Salt spray resistance.
Color acceptability.
Flexibility.
Gloss.
Adhesion.
Heat resistance, color stability.

The request to evaluate new and improved organic finishing materials may come from any of the divisional purchasing agents, or may come from any of the divisional product engineering laboratories, after they have thoroughly discussed the new organic finishing materials with the vendor. The divisional product engineering laboratories may ask the research and development laboratory to evaluate these new materials so that their findings may be confirmed. The research and development laboratory works directly with vendors on materials which may be three or five years away from production application. These materials may be only in the development or pilot plant stage in the organic finish manufacturer's plant. If the result of the investiga-

For more data on advertisement on opposite page, circle **174** on Reader Service Card ——→

Measure Coating Thicknesses ACCURATELY & NON-DESTRUCTIVELY

METAL Coatings on IRON, STEEL and NICKEL Coatings



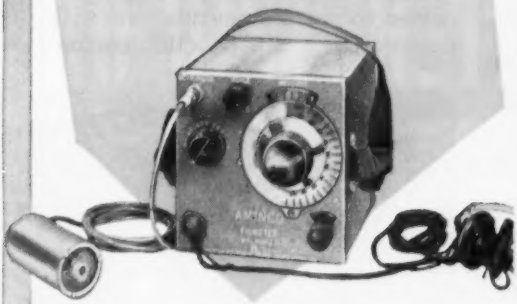
MAGNE-GAGE

The Magne-Gage quickly and accurately measures thickness of coatings such as the following:

1. Nickel coatings up to 0.001 in. thick on non-magnetic base metals, such as copper, brass, and zinc-base diecastings.
2. Polished nickel coatings up to 0.002 in. thick on iron or steel.
3. Non-magnetic coatings up to 0.080 in. thick on iron or steel. Such coatings may be electro-deposited copper, zinc, cadmium, tin or chromium; hot-dipped tin, zinc or lead; non-metallic paint or vitreous enamel.

Instrument is portable—measures curved as well as flat surfaces—accuracy within ±10%. Complete readings can be made in 45 seconds.

Coatings of PAINT, VARNISH, SHELLAC, CERAMICS, PLASTICS, ANODIC



FILMETER

Thickness of non-conducting coatings on non-magnetic base metals (aluminum, duralumin, brass, copper and bronze) are readily measured by the Filmeter. Coatings in this category include paint, varnish, shellac, lacquer, enamel, plastics, and ceramics from 0 to 0.005 in. thick.

The Filmeter measures with an accuracy of ± 3% of full scale. Measurements can be made on flat, concave or convex surfaces.

The instrument will measure anodized films from 0 to 0.001 in. thick, on aluminum, or aluminum alloys in accordance with ASTM Test No. B244-49T.

Device includes an inductor which is placed on the coated surface; a control box, a set of earphones, standard thickness samples, and a calibration chart. The instrument weighs only 11 lb., is battery-operated and fitted with a carrying strap.

Specified by ASTM For Test 1400-56T

The Filmeter has recently been recommended by the ASTM (American Society for Testing Materials) as the instrument to perform Test No. 1400-56T, "Method for determining the dry-film thickness of non-metallic coatings of paint, varnish, lacquer and related products on a non-magnetic metal base."

Full information for both instruments contained in **BULLETIN 2253— G** *, furnished on request*

AMINCO

AMERICAN INSTRUMENT COMPANY, INC.

Silver Spring, Maryland

In Metropolitan Washington, D. C.

tion of an organic finishing material shows that this material meets all the specifications, the finish is favorably recommended to the purchasing department.

The purchasing department discusses these recommendations with engineering and production personnel. If the purchasing department is favorably inclined, a tentative trial run is scheduled, usually amounting to 10 drums.

After the 10-drum trial run, a meeting is held between purchasing, production and engineering personnel to discuss the results. If the test is satisfactory, a tentative schedule is set up by the purchasing department, consistent with present production schedules and commitments to other manufacturers of organic finishes. The next trial production run is usually 50 drums of material, and at that time the cost department collects accurate data on regular production materials.

If the 50-drum trial run is satisfactory, the material is then placed on the engineering blueprint as an acceptable organic finish. The use of this new product or the other approved products is then left to the discretion of the purchasing department.

THE *One-coat*
HEAVY DUTY PROTECTIVE COATING

For Structural Steel • Tanks • Stacks
Walls and Floors • Tank Truck Exteriors

Outstanding resistance to chemicals, acids, alkalies and solvents . . . withstands extreme weathering . . . can be applied by brush or roller coating . . . dries to touch in six hours.

SERIES E-900 COATINGS are high solids modified epoxy formulations which result in superior toughness, resistance to abrasion and excellent adhesion to any clean surface.

Regularly available in . . . clear . . . white . . . gray . . . and sea-foam green. Because of high solid content, 95% of the applied thickness is converted to a protective film.

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Technical Bulletin E-900

7300-CC

THE CEILCOTE COMPANY INC.
4848 Ridge Road • Cleveland 9, Ohio

For more data circle **175** on Reader Service Card

ANY PLATER CAN AFFORD
THIS NEW ANSWER TO AN
OLD CHROME PLATING PROBLEM

UDYLITE
ZERO-MIST H.T.*

Now You Can Completely Control Mist and Spray from Chromium Plating Baths —

AND DO IT AT A VERY REASONABLE COST

LOW INSTALLATION COST — This new product of Udylite Research is so powerful that you need only $1\frac{1}{2}$ *pounds* to a *1000 gallon* chromium plating solution to get perfect results.

LOW MAINTENANCE COST — The addition of as little as $\frac{1}{4}$ to $\frac{1}{2}$ lb. in an 8-hour working day maintains mist and spray control. Its only loss is through dragout.

COMPLETELY STABLE — It's *completely stable;* it doesn't lose any of its strength during shut downs no matter how long they must be.

OPERATES AT HIGH TEMPERATURES — For the first time *the temperature of the bath has no effect on mist control.* Zero-Mist H.T. works at any bath temperature, even boiling.

EASE OF CONTROL — It's *easy to control.* With the addition of Zero-Mist H.T., a thin foam blanket forms when current is turned on. The foam blanket subsides when the current is turned off, but reforms as the bath is again used. This foam blanket provides the simple visible check for efficient operation.

LOW COST • STABILITY • HIGH TEMPERATURE OPERATION • VISUAL CONTROL

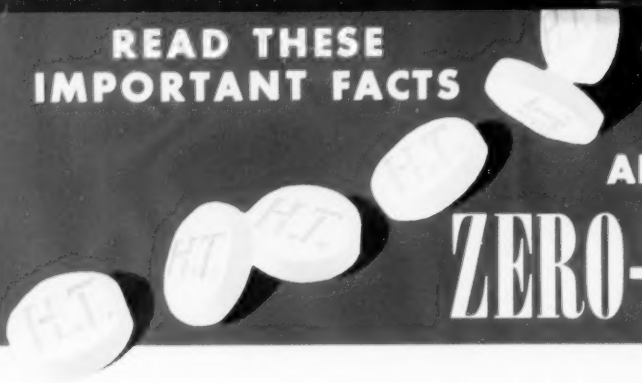
ZERO-MIST H.T. HAS THEM ALL

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

FOR FURTHER DETAILS SEE NEXT PAGE

READ THESE IMPORTANT FACTS



ABOUT THE *NEW* ZERO-MIST H.T

ZERO-MIST H.T.

Is a completely stable, powerful surface active additive for chromium plating baths. When added to chromic acid plating solutions it forms a foam blanket which completely eliminates mist and spray. It is indestructible *even at high temperatures*. Additions of Zero-Mist H.T. are required only to replace dragout losses.

ONLY A SMALL QUANTITY IS REQUIRED

The concentrated formula of Udylite Zero-Mist H.T. means that only a small amount is required for the solution. Tests conducted over many months have shown that only one to one-and-one-half pounds of Zero-Mist H.T. are usually required for 1000 gallons of chromic acid solution. This creates a foam blanket about ½" to 1" thick which holds back all mist and spray.

EFFECTIVE IN HIGH TEMPERATURE BATHS

Zero-Mist H.T. controls mist and spray regardless of the temperature of the plating solution. It works as well at high temperatures as it does in low temperature solutions. The most concentrated boiling chromic acid solutions in no way affect its efficiency nor does it cause a breakdown of its chemical properties nor is it affected by the highest anode or cathode current densities used in chromium plating.

IMPROVES HEALTH CONDITIONS

Improvement of health conditions in the plating room is evident immediately when Zero-Mist H.T. is used. Occupational hazard is also reduced with the elimination of spray. Cross currents of air do not blow chromic acid mist in the air of the plating room, a fault common to wide tanks which are difficult to ventilate, as well as tanks of normal width located near open doors or windows.

VISUAL CONTROL

The foam blanket, which is always visible tells you if additions of Zero-Mist H.T. should be made. Zero-Mist H.T. is indestructible, but dragout does cause a need for occasional additions. Usually only a fraction of a pound is required per 8 hour work shift. Once the chromic acid solution is charged with Zero-Mist H.T. the foam blanket appears immediately with the use of the solution. If Zero-Mist H.T. is producing a satisfactory blanket when the tank is shut down, it is not necessary to add more when starting up again, regardless of the time interval, since Zero-Mist H.T. is completely stable.

ELIMINATES WASHING OF EXHAUSTED AIR

When Zero-Mist H.T. is used there is no need for washing the exhausted air. Ventilating systems stay cleaner and require very little maintenance thereby saving many dollars to the chrome plater each year.

GUARANTEED BY UDYLITE

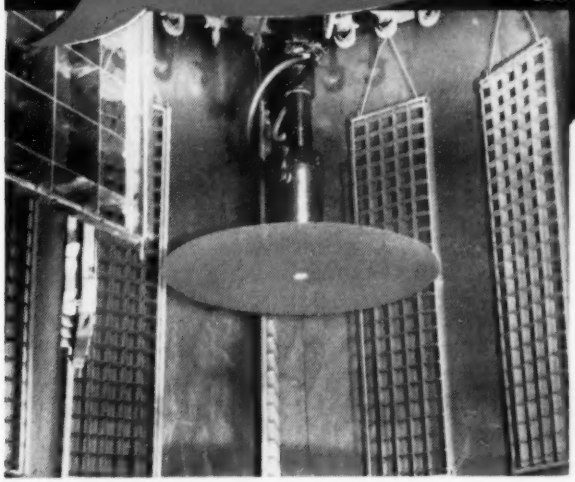
Zero-Mist H.T. is guaranteed by Udylite to be the finest and most economical surface additive for chromic acid baths you have ever used. Order a sample of this remarkable new product today.

THE **Udylite** CORPORATION
DETROIT 11, MICHIGAN

What d'ya mean . . .

You're too little to use RANSBURG Electrostatic Spray Painting?

If your production justifies conveyorized painting, chances are RANSBURG NO. 2 PROCESS can do YOUR painting job better . . . at less cost.



RANSBURG NO. 2 PROCESS *accounts for a 50% savings in paint costs in finishing fluorescent lighting fixture parts for* MELROSE LIGHTING COMPANY, *Philadelphia. Melrose is a small plant employing only 25 people.*

Not only big industrial manufacturers like G. E. . . . Whirlpool-Seeger . . . Westinghouse and Republic Steel, but little plants, too, are using RANSBURG NO. 2 PROCESS in their finishing departments to help keep mounting manufacturing costs in line.

A typical example is Melrose Lighting Company, Philadelphia. They make industrial fluorescent lighting fixtures and employ only 25 people.

Formerly, according to F. Homer Hagaman, owner Melrose Lighting, when their fixture louvres were hand sprayed, they painted only 70 pieces per hour. Now, with Ransburg Electro-Spray, he reports they get over 200 per hour.

Production on the fixture end parts jumped from 400 pieces per hour by hand spray to over 2000 an hour electrostatically—a 400% increase!

Along with improving quality of the work, stepping up production, and cutting labor costs, Melrose is enjoying a 50% paint savings.

Let us show you how Ransburg No. 2 Process can lower YOUR painting costs. Write for our new No. 2 Process brochure on electrostatic spray painting. Numerous production-line examples show how other manufacturers are cutting finishing costs . . . increasing production . . . and improving the uniformity and quality of their work with Ransburg equipment.

Ransburg ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

For more data circle 177 on Reader Service Card

While all approved materials meet the specifications, some have added plus values over others.

To assist the purchasing department in deciding which vendor and which product should be given preference, the engineering group prepares a rating chart of the various materials with emphasis on the more desirable of the organic finishes. Data on mileage cost, and information from production personnel on the best workable materials is also given to the purchaser.

Plastisols and Plastics

Before concluding I would like to mention two other products which are competing for the appliance manufacturers' finishing dollar. These are plastisol coatings and plastics. Plastisols have found applications in dishwashers, refrigerators and home freezers. Plastics of all types have been used on almost every appliance made, either as a decorative part or as a working part. I point out these because the organic finish manufacturer is not only competing against porcelain enamel finishes but also against these newer materials.

Adapted for publication in PRODUCTS FINISHING from an address given by E. L. Faneuf in the Industrial Product Finishes Management Forum at the 69th Annual Convention, National Paint, Varnish & Lacquer Assn. Published by permission of the Association.

NEVER A DOUBT

From rough deburring to final finish, you're always sure of superior results in less time at lower cost with Esbec Compounds:

★ *Full selection for every operation and every material.*
★ *Color-coded for easy, quick identification.*
★ *Performance and economies proven throughout industry, and under all water conditions.*

EQUIPMENT COMPOUNDS ABRASIVES

ESBEC BARREL FINISHING CORP. 192 Beech St., Byram, Conn.

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METARAY® ELEMENTS

Any infrared reflector bank can be equipped with glassless, glareless, self cleaning Metaray elements. Radiation is uniformly spread in a figure 8 pattern.

Ask for Bulletin L-1104-A

MODULAR RADIANT PANELS

A high-intensity, accelerating heat source. Four standard, modular panels completely factory assembled with built-in continuous bus, reflector, insulation, frame and mounting. Lets you tailor heat source exactly to process requirements.

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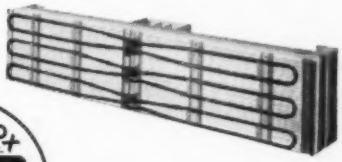
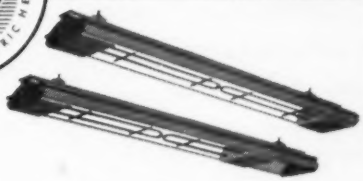


CHROMALOX — FIRST NAME IN ELECTRIC HEAT

RADIANT HEATERS

For assembly in banks. Two bolts to hold it; two wires to connect it. Six standard lengths, 14 standard wattages. Housing is rigid extruded aluminum with brightly polished parabolic non-oxidizing reflector.

Ask for Bulletin CS-604



ADJUSTABLE AREA RADIANT HEATERS

The new Chromalox URAD lets you match heat source to the work area. Choose one basic housing for your largest work. Into the housing you install any of 6 different heated lengths to fit various work sizes.

Ask for Bulletin CS-607

CHROMALOX ELECTRIC HEATERS

give you better finishing results

When you install Chromalox electric heating equipment, you get better process control, fewer rejects, lower operating costs. That's because Chromalox electric heaters have been developed to meet the exacting standards of the finishing industry.

No matter how specialized your heating problem, there is a Chromalox heater designed especially for the job. Call your Chromalox Direct Factory Engineer for helpful assistance on your heating problems.

IMMERSION HEATERS

Portable and tank types for electroplating, cleaning and pickling. Available in a variety of sheath metals for the best service in corrosive as well as non-corrosive solutions. Complete range of controls and accessories.

Ask for Bulletin 750

B-705

Edwin L. Wiegand Company

7522 Thomas Boulevard, Pittsburgh 8, Pa.

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Continuous Strip Galvanizing at Inland Steel

By ARTHUR Q. SMITH
American Gas Association

Galvanizing is one of the oldest and most practical ways to protect steel from corrosion. At Inland Steel's Indiana Harbor Works, steel is coated in an almost completely automatic continuous strip galvanizing line.

Galvanized steel—low carbon steel protected by a skin of zinc, or in the case of Inland, an alloy made up of 0.20 per cent aluminum, 0.50 per cent lead, a trace of cadmium and the balance pure zinc — has a wide variety of applications because it provides strength without bulk, and long life at low cost. It has served for years, constantly and dependably, as roofing, siding, guttering; you see it in farmers' granaries, water tanks, barns and

Fig. 1—Feed end of continuous galvanizing lines at Inland Steel's Indiana Harbor Works.

buckets; in heating pipes and storage tanks; in many products used in the home. And its future seems even more promising than its past.

Zinc can be coated on steel in a number of ways. The most commonly used method of galvanizing is the process by which previously annealed sheets are passed through a flux and then into a bath of molten zinc. However, all of Inland's galvanized steel is produced by the relatively new Sendzimer process, a continuous operation in which heat treatment of the strip, through the use of natural gas, and the zinc coating, are performed in one continuous galvanizing line.

The continuous strip galvanizing lines are of the latest design and are under full-automatic control. Strips from 20 inches to 60 inches wide in assorted gauges are zinc coated at speeds from 40 to 300 feet per minute. Inland's 60-inch line is the only one of this size in existence anywhere.

Manufacture of galvanized steel sheets actually starts with the bubbling steel in the open hearth furnace. There the characteristics of the steel to be galvanized are determined. If the steel, after being galvanized, is to be fabricated into complicated forms, it should be relatively soft and ductile, hence low in carbon content. The Inland steel strip intended for galvanizing (Fig. 1) is routed to one of the three continuous galvanizing lines in the Inland Indiana Harbor Works.

From the feed end of the continuous line, the strip enters the first of the furnaces. This is a 20-foot oxidizing furnace where oil from the rolling mills is burned off and the strip temperature is raised to 850 deg. F. The strip is under tension here. The oxidizing process cleans the surface of impurities. A light blue oxide coating is deposited on both surfaces by the 192 burners located over and under the strip.

The strip next enters the controlled atmosphere reducing furnace (Fig. 2) where it is normalized, control cooled, final cooled, and deoxidized. It is brought to the normalizing temperature of 1800 deg. F. as rapidly as possible in the first four radiant tube zones. These zones are heated by 112

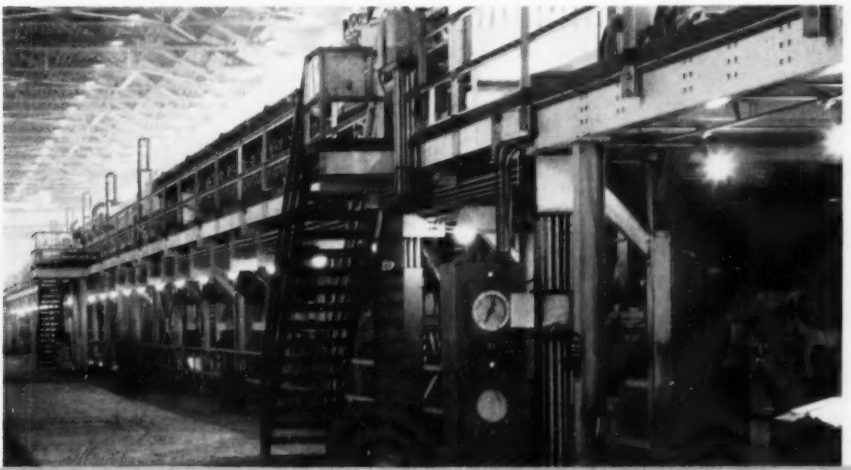

Fig. 2—Gas-fired reducing-atmosphere furnace section of the continuous galvanizing line.

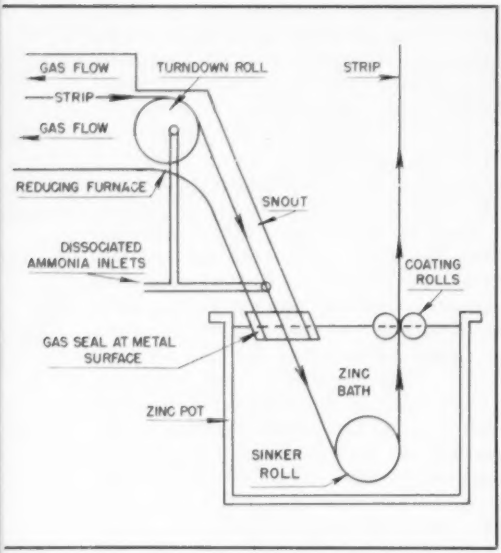

Fig. 3—Drawing shows how steel strip enters galvanizing bath from reducing furnace.

gas-fired radiant tubes placed over and under the strip. The fifth heating zone and the six controlled cooling zones are heated by electric grids placed under the strip. The controlled cooling zones also have air cooling tubes placed over the strip. The lighter gauges of strip require heat in this section while the heavier gauges require cooling. The final cool section has air cooling tubes placed over and under the strip. A reducing atmosphere of 75 per cent H_2 and 25 per cent N_2 surrounds the work from its entry at the opening of the reducing furnace right down to the surface of the molten zinc bath. The hydrogen atmosphere reduces all of the oxides of iron formed in the oxidizing furnace and in the normalizing cycle. This is an important requirement of

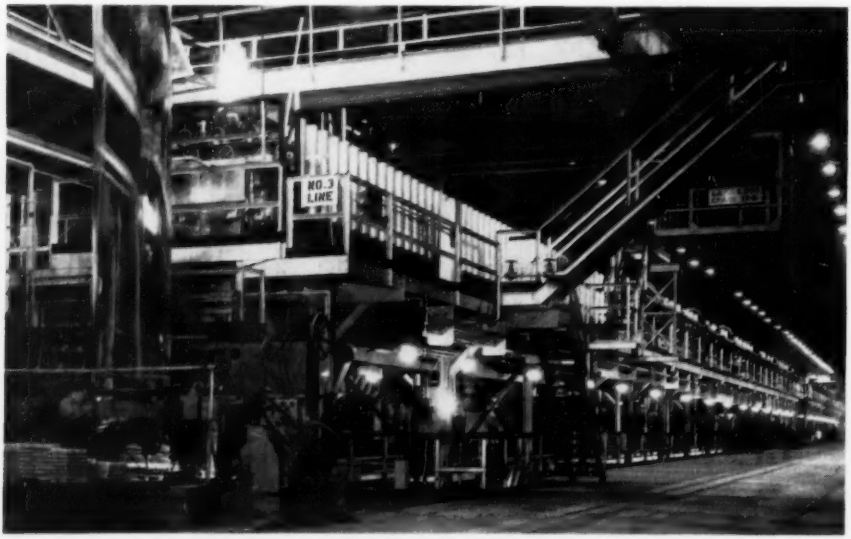

Fig. 4—Galvanized strip rising vertically from zinc bath at end of Inland's galvanizing line. Strip now enters cooling chamber to prepare it for further processing.

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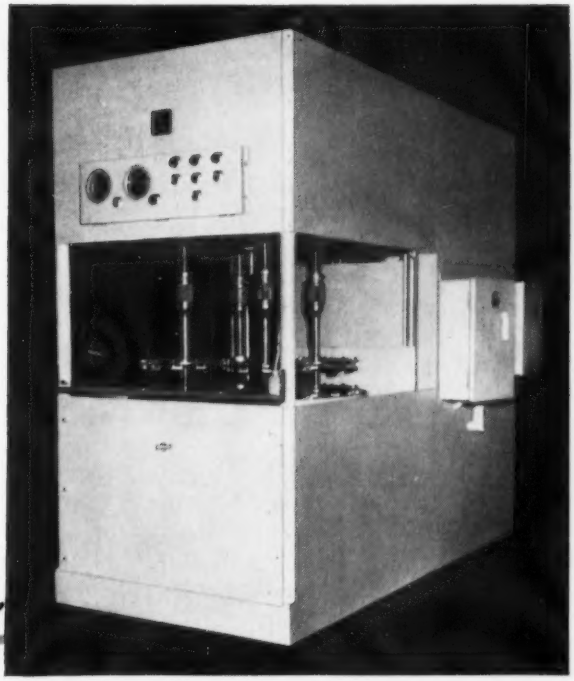
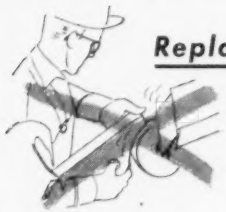
FINISH

OFFERS

Spin-Finish



AN ENTIRELY NEW PARTS-FINISHING PROCESS



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- ☑ Completely dry process . . . no lubricants
- ☑ Dust and fume free . . . no exhaust systems
- ☑ No set-up time required

Sets New Standards In Pre-Plating Finishing Costs

Wipe the slate clean of all present concepts of speed, efficiency and costs in pre-plating finishing of brass, zinc-base and aluminum die-cast parts! In one short, automatically-timed operation—and on a *multiple mounting* of parts—new SPIN-FINISH produces surfaces and lustre equal to or surpassing that of buffing. Write for information.

GRAV-I-FLO CORPORATION

Dept. PF-1, 400 Norwood Avenue, Sturgis, Michigan

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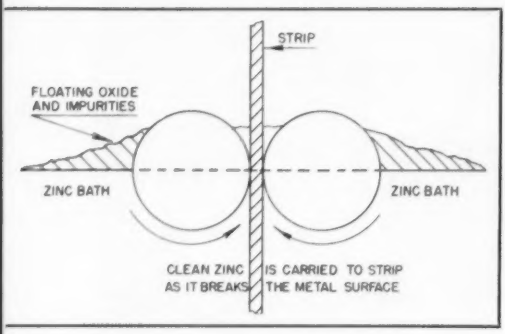

Fig. 5—Drawing shows how strip leaves the bath through a set of coating rolls adjusted to produce the proper coating thickness.

the Sendzimer process: a clean strip entering the molten zinc bath. Except for the lighter gauge strip, the bath temperature of 850 deg. F. is held constant by heat transfer from the continuous strip. Electric grids located around the outside of the pot furnish heat for the lighter gauges and during start-up periods.

The strip enters the bath through a snout (Fig. 3) which projects downward from the final cool section. The snout is immersed in the molten bath to provide a seal for the reducing atmosphere. The strip travels around an idler roll in the bottom of the bath and emerges from the bath in a vertical direction. (Fig. 4). A set of coating rolls at the surface of the baths (Fig. 5) are adjusted to give the desired thickness and appearance. Continuing up, the strip enters the cooling towers where the temperature is reduced to prepare the strip for further processing (Fig. 6) in a chemical treatment, levellers, shearing or a coiling operation.

Because of the close temperature control made possible through the use of natural gas, these galvanizing lines are highly efficient. The other attributes of natural gas are largely responsible for the high speed of these lines and the superlative housekeeping of the entire plant.

The efficiency and product of the

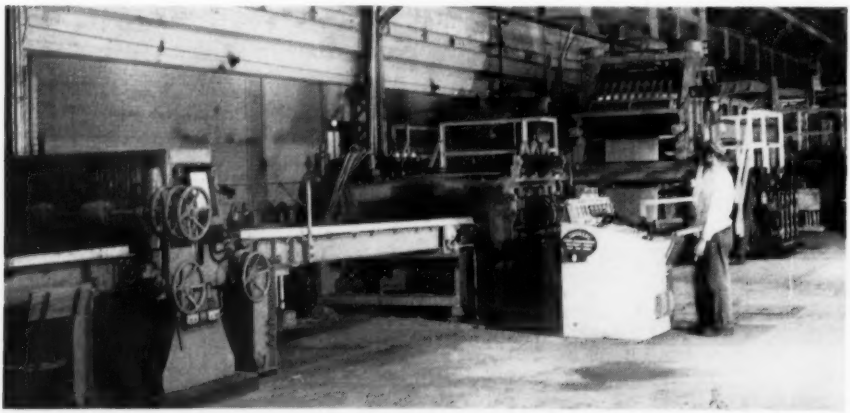

Fig. 6—Finish end of continuous galvanizing line. Sheets have been cooled and are now ready to be chemically treated, levelled, sheared and made ready for shipment. (Photos courtesy American Gas Association and Inland Steel Company, E. Chicago, Ind.)

Acme Plating Co.
Addressograph-Multigraph Corp.
American Rad. & Std. Sanitary
American Steel & Wire
Fred Arbogast Co., Inc.
The Autocall Co.
Bendix-Westinghouse
Brush Electronics Co.
Capitol Mfg. & Supply Co.

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Cleveland Pneumatic Tool Co.
Cleveland Register & Grille
Collier Steel Corp.
The Colson Corp.
Diamond Alkali Co.
Dixie Culvert Mfg. Co.
Dornback Furnace & Foundry
Electric Wheel Co.
Euclid Electric & Mfg. Co.
Federal Welding Service, Inc.
Fisher Body Div., G. M.
The Frankelite Co.
Gardner Displays Co.
General Electric Co.
The General Fireproofing Co.
Godfrey & Wing Lamps
Goodyear Aircraft Corp.
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The Harcort Mfg. Co.
The E. F. Hauserman Co.
Health Items, Inc.
Hope Metal Products, Inc.
Hull Mfg. Co.
Imperial Lighting Products Co.
The Kirk & Blum Mfg. Co.
Koolvent Aluminum Awning Co.
Liberty Bell Mfg. Co.
Martin Bros. Electric Co.
Martin Steel Products Corp.
Mine Safety Appliances Co.
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We engineer your finishing problems

Reliance Electric & Eng. Co.
The Rybolt Heater Co.
The Scott & Fetzer Co.
Taylor-Winfield Corp.
Thompson Products, Inc.
Truck Engineering Corp.
Vacuum Metallizers, Inc.
John C. Virden Co.
Vichek Tool Co.

For more data circle 181 on Reader Service Card

continuous galvanizing line is so far superior to the old sheet by sheet dip method that it is useless to make any comparison. Each continuous line at Inland operates for a period of 15 weeks, during which time the galvanizing goes on day and night. As one roll of strip reaches its end, the next one is welded to the end of the preceding coil and so on for the entire period.

For more data circle 1 on Reader Service Card

★ ★ ★

Abrasive Wheel Produces Improved Finish on Revolvers

A problem involving removal of milling cutter marks and tool marks after primary machining operations has been solved by converting to use of Cratex Polishing Wheels. The difficulty in this operation is in removing the marks and at the same time producing a product with a high polish for the sake of appearance, without losing the specified dimensions.

A Cratex Coarse Grit Wheel is used first to eliminate and smooth cutter marks and tool marks. Then a Cratex Medium-Grit Wheel is used for final polishing. A hand-fed, floor-type grinder is used — spindle speed is 1750 r.p.m.

For more data circle 2 on Reader Service Card

★ ★ ★

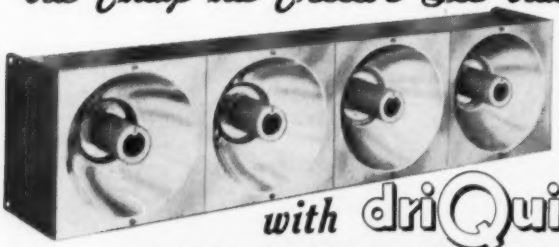
Small Plant Installs Electrostatic Spray

Little plants, as well as the "industrial giants" are installing automatic finishing equipment.

Melrose Lighting Company, Phila-

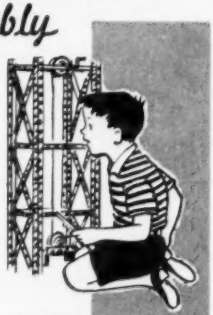
BUILD INFRA-RED OVENS

As Easy as Erector Set Assembly



with driQuik

INTERLOCKING SECTIONS



These pre-engineered sections are completely wired, with easy-to-assemble structural parts for permanent or mobile ovens. Or, if you prefer, we will build ovens to your specifications.

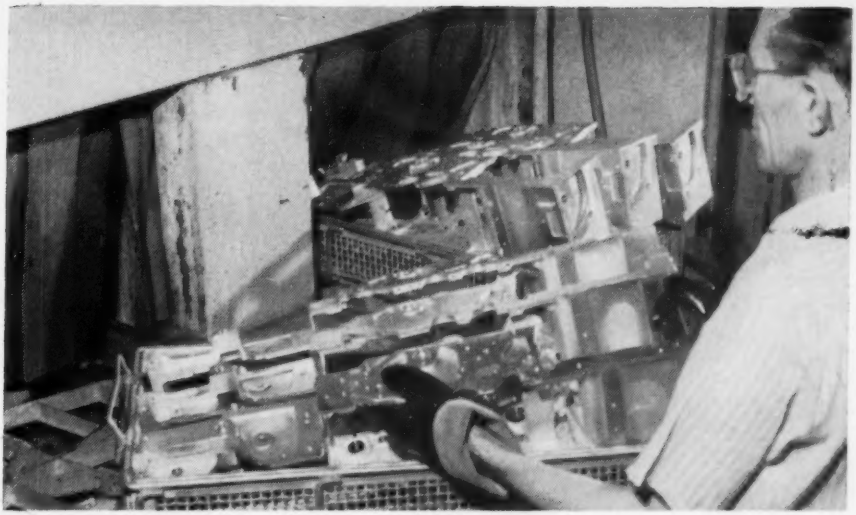
LOW INITIAL COST either way and maintenance costs are practically zero because these units have ceramic type generators and there are no bulbs or sockets to burn out. DARK BURNING—NO high intensity light injurious to eyes. Write today for literature giving complete data.

OVENS ANY SIZE OR SHAPE

driQuik DIVISION

DRY CLIME LAMP CORP.
GREENSBURG, INDIANA

For more data circle 182 on Reader Service Card



New Non-Foaming, Cleaning Compounds For Spray Washers!

From Magnus "X-3" Series of Spray Washing Compounds, you can now select the one Magnus product that completely answers your particular spray washing problem. Combined with the introduction of the "X-3" Series, Magnus has released Bulletin No. 73 which covers facts on the effectiveness of each product in the line. Get your copy by writing to Magnus Chemical Company, Inc., 208 South Avenue, Garwood, N. J.

If you are considering a new production parts cleaning system or modernizing your present set up—ask us about Magnus Materials, Machines and Methods and a complete survey of your cleaning problem by a Magnus Cleaning Methods Engineer.

magnus

Industrial Cleaning Division

MAGNUS CHEMICAL CO., INC.

—a world-wide organization specializing in cleaning and protection of all surfaces.

For more data circle **183** on Reader Service Card

OFHC® SHIELDS AN IBM ELECTRONIC "BRAIN"

OFHC Anodes provide high-density copper plate for computer "memory drums"

The "memory drum" of the IBM 650 Magnetic Drum Data Processing Machine can store 20,000 different items of information. The functional accuracy of a unit of this complexity relies on use of the finest materials available.

AMCO is proud to contribute to the accuracy of the IBM 650 through the use of its OFHC Copper Anodes. OFHC Anodes meet the exacting specifications required for plating the rotor of the memory drum. The copper plate acts as a barrier between the steel shell of the rotor and the rotor's magnetic coating. The plate must therefore be of the highest possible density and lowest possible porosity. The purity and uniformity of OFHC Anodes provide the smooth surface so necessary in this application.

Additional information on OFHC Anodes and technical assistance on any copper plating problem available on request.

OFHC® COPPER ANODES

are manufactured only by

Metal Sales Department

THE AMERICAN METAL COMPANY, LTD.

61 Broadway, New York 6, N.Y.

delphia, is a good example. This company produces industrial and commercial fluorescent lighting fixtures. They have only 25 employees. But, in a year's time they turn out a lot of fixtures, most of which are sold in the eastern part of the country.

One day last December the plant was converted to electrostatic spraying. The conversion was made during the lunch hour, and at 1 o'clock the line was operating with Ransburg No. 2 Process Electro-Spray doing the painting. Without interfering with daily production, a loop was built during off hours, by-passing the conveyor line. An overhead reciprocating-disk atomizer was installed in the center of the loop. During the noon shut-down, the 8-foot loop was cut into the conveyor; connections were made, and everything was ready to go.

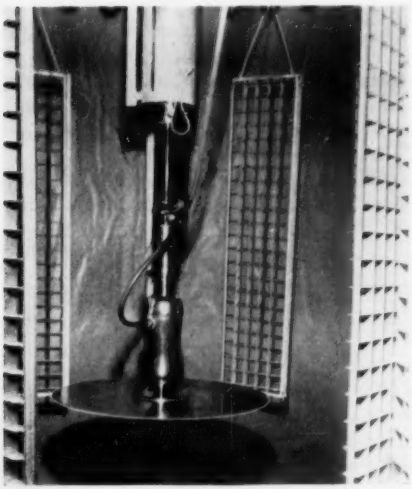


Fig. 1—Fluorescent lighting fixture louvres are being painted electrostatically by Ransburg No. 2 Process at the rate of 200 per hour in the paint finishing department of a small company, the Melrose Lighting Co.

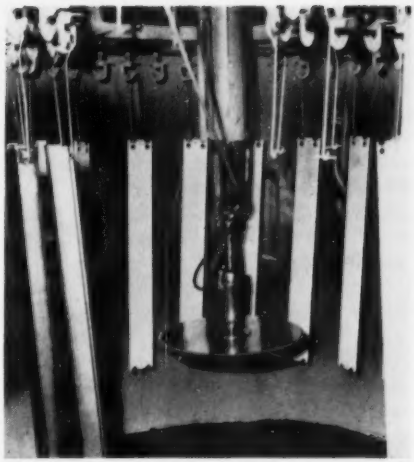


Fig. 2—Lighting fixture parts of various sizes and shapes are painted electrostatically as the conveyor makes a loop around the Ransburg No. 2 Process reciprocating disk atomizer. (Photographs courtesy Ransburg Electro-Coating Corporation, Indianapolis, Ind.)

Reflectors, louvres (commonly referred to as "egg crate" parts of the lighting fixtures), the irregular-shaped ends, and several other parts are painted electrostatically. Some of the larger parts are hand sprayed in a water-wash booth, and hand touch-up is required on louvres. Parts such as reflectors, 13 by 48 inches in size, are hung individually on a workholder, while some of the smaller parts, such as fixture ends, are grouped together.

With electrostatic spraying, over 200 louvres per hour are painted, using two men for touch-up, which is necessary in the recessed areas.

At Melrose, the 281-foot conveyor is operated at speeds ranging from 5 feet to 14 feet per minute, depending upon the parts being painted. After parts are coated, they pass into a gas-fired induction oven where they are baked at 300 deg. F. Depending upon the conveyor speed, baking time ranges

←———For more data on advertisement on opposite page, circle **184** on Reader Service Card

from five minutes to eleven minutes.

The present vapor degreaser is not conveyorized and this step in production has now become a bottleneck. Plans for increasing plant space another 5,800 square feet are under way and a new automatic 55-foot washer is on order.

Average production of fixture end parts is 2,000 an hour. Quality of the work being produced by the new system is excellent. Under the present setup, the ends are hung, six to a workholder, on 18-inch centers. As parts pass around the reciprocating disk in the conveyor loop, an indexer in the loop center turns the workholder, and both sides are coated in a single operation.

For more data circle **3** on Reader Service Card

★ ★ ★

Impervious Graphite Heat Exchanger Used For Both Heating and Cooling Plating Solution

An impervious graphite heat exchanger is being used successfully by Michigan Plating & Stamping Co., Grand Rapids, Michigan, for both heating and cooling of a nickel solution.

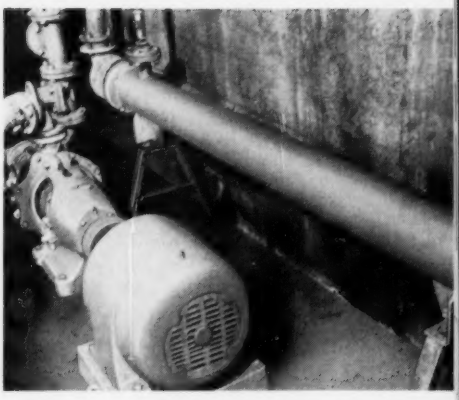


Fig. 1—This impervious graphite heat exchanger is being used for both heating and cooling a nickel plating solution in the plant of Michigan Plating & Stamping Company.

This heavy-duty exchanger, a product of Falls Industries, Inc., Solon, Ohio, is designated the "Cross-Bore." The one in use at Michigan Plating & Stamping Co. is a single pass unit with 21.2 square feet of transfer surface. It consists of three parts: (1) "one-piece" fully floating impervious graphite heat transfer cylinder, (2) "one-piece" header domes, and (3) a shell with required nozzles and mounting brackets.

The heat exchanger heats 7,000 gallons of solution in 6 hours from 95 deg. F. to 160 deg. F. — an operating effi-

To page 82→

HIGH QUALITY FINISH without baking

If you want to hold down costs—and get a fine-appearing, long-lasting finish — find out about Thompson Air-Dry Enamels. Made in many colors and degrees of gloss, they give you adhesion, toughness, durability—and the extra advantage of fast air-drying. Write for literature.

Industrial and Technical Finishes Since 1847

THOMPSON and COMPANY
1010 ALLEGHENY AVE.
OAKMONT, PA.

For more data circle **185** on Reader Service Card

Using 5 Sly Cabinet Ovens for stress relief of armature shafts, well-known electrical equipment manufacturer experiences uniform oven temperature in closely controlled experimental work.

CLOSE CONTROL OF PROCESSING

with compact, portable SLY OVENS

Sly Cabinet Ovens give accurate temperature control for all laboratory and production baking, drying and dehydrating. Compact, portable, rugged, they are surprisingly inexpensive.

MANY FEATURES: Uniform work chamber temperature assured by use of high-pressure blower — no radiant heat. Double-gasketed doors with effective heat trap. High volume adjustable air flow. High and low heat switch for close control, quick recovery. LEONEL-sheathed lifetime heating elements. And many more.

COMPLETELY ASSEMBLED: Sly Cabinet Ovens are thoroughly tested, then shipped as complete units, including all wiring. Just connect the power lines for immediate operation.

Available in electric (as illustrated) or gas-fired. *Write for Heavy-Duty Cabinet Ovens Bulletin.*

THE W. W. SLY MANUFACTURING CO.

SINCE 1874

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle 186 on Reader Service Card

A revolutionary developmen

NEW! DURA
Thermo-settin
• DURACRON Enamel is a distinctive and new development of the Modern Paint Research Laboratories of the Pittsburgh Plate Glass Company. It is not merely another modification of existing finishes, but a basically new chemical composition, and a revolutionary departure from the baking enamels used today.
• New DURACRON is particularly well adapted to the finishing of refrigerators, home laundry equipment, ranges, and air conditioning units. However, its amazing toughness, mar resistance and durability may be advantageously employed for other products on which it is desirable to improve present baking enamels.
PITTSBURGH PAINTS
PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS
PITTSBURGH PLATE GLASS COMPANY
IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

in industrial finishes!

Acrylic Enamel!

Only New DURACRON offers you all these advantages over other baking enamels:

- Superior adhesion—either to bare metal or to primer.
- Outstanding toughness, hardness and impact resistance—either as a one-coat enamel or over primer.
- Remarkable color and gloss retention for prolonged periods at temperatures up to 400°F.
- Greatly increased resistance to modern detergents.
- Greases, inks, fruits, mustard, ketchup, etc. will not stain.
- Gives improved resistance to salt spray, humidity and other corrosive atmospheres.
- Provides a sanitary, taste-free, mar-proof liner for food cabinets.
- Retains film continuity even under severe impact.

Mail This Coupon Today—It May Improve the Beauty and Durability of Your Products.

We'll be glad to provide you with additional information of new DURACRON. Mail coupon at right to Pittsburgh Plate Glass Co., Industrial Finishes Div., 1 Gateway Center, Pittsburgh, Pa.

Pittsburgh Plate Glass Company,
Industrial Sales Division,
1 Gateway Center, Pittsburgh, Pa.

Gentlemen: Please send me additional information about your revolutionary new DURACRON.

Name_____

Company_____

Address_____

City_____ County_____ State_____

For more data circle **187** on Reader Service Card

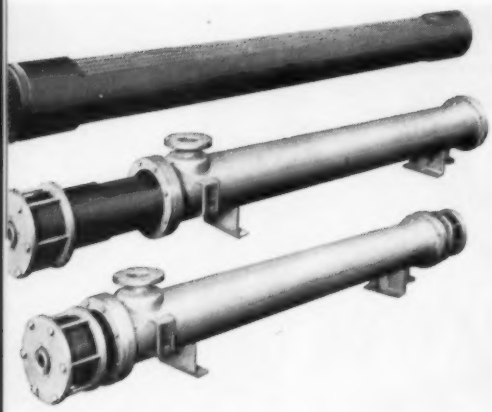


Fig. 2—The above photograph, from bottom to top, shows Impervious Graphite Cross Bore Heat Exchanger disassembled to show its simple components. (Photographs courtesy Falls Industries, Incorporated, Solon, Ohio.)

ciency of 200 B.t.u./hr./square foot/deg. F. During actual plating operations, this same exchanger is used to *cool* the bath.

The Cross-Bore exchanger accommodates operating pressures in the 150-200 p.s.i. range at temperatures up to 340 deg. F. Cross-Bore exchangers are available in seven standard models (single or double pass) with heat transfer areas from 21.2 to 187.5 square feet.

For more data circle **4** on Reader Service Card

★ ★ ★

Polyvinyl Chloride Sheets Used in Building Plating Tank

Calendered rigid polyvinyl chloride sheets, manufactured by the Bakelite Co., a Division of Union Carbide and Carbon Co., have been used to fabricate

Rhodium
ELECTROPLATING SOLUTIONS
SINCE 1901
Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.
Recommended for contact surfaces of switches, waveguide parts and other electrical applications; can be applied in extremely heavy deposits, where required, up to 100 miligrams per square inch.
Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.
Consult our staff, without obligation, about your specific plating problems.
SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE, MOUNT VERNON, N. Y.

For more data circle **188** on Reader Service Card

THE NEWEST ACHIEVEMENT IN COLD SPRAY CLEANING

Jet 50

JET 50 HAS EVERYTHING IT TAKES TO SET NEW RECORDS FOR SPRAY CLEANING EFFICIENCY IN YOUR PLANT.

- **A non-foaming spray cleaner that works at room temperature.**
- **Safe for use on all metals.**
- **A positive rust inhibitor.**
- **Moderate cost. Long life at top efficiency.**
- **Heavy dirt load capacity.**
- **Maintains pleasant odor even with heavy dirt load.**
- **Prevents bacterial growth. Nontoxic. Non irritating to skin.**
- **Can be used hot as well as cold. No disposal problem.**

Let the Northwest Cleaning Specialist explain how Jet 50 can improve your production.

Remember — YOUR COST PER FINISHED ARTICLE IS THE TRUE COST OF YOUR CLEANER

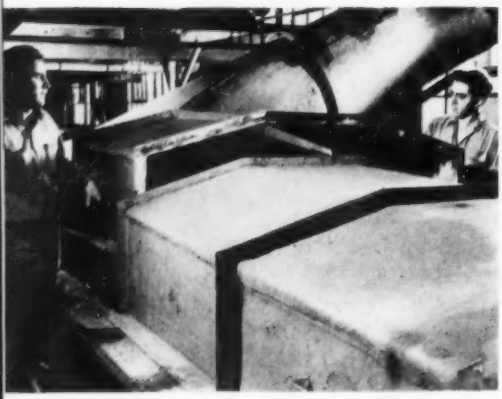
LO HI pH

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control *serving you since '32*

For more data circle **189** on Reader Service Card



Electroplating Tank Fabricated of Polyvinyl Chloride Sheets. (Photograph courtesy Bakelite Company, a Division of Union Carbide and Carbon Corporation, New York, N. Y.)

a self supporting electroplating tank. These polyvinyl chloride sheets have high impact, tensile, flexural, and welding strengths combined with excellent resistance to chemicals and moisture. These qualities made them well suited for use in electroplating tanks.

The tank was made by the American Agile Corporation, Maple Heights, Ohio, from continuous sheets of polyvinyl chloride laminated into sheets 120 inches long, 51½ inches wide, and ⅜ inch thick by Laminations, Inc., Scranton, Pa. The sheets were cut to form the sides and bottom of the tank with an electrically operated hand saw. Spacer rods used to hold the tank sides equidistant were made of lathe-cut rods, with plug-shaped ends. The core was removed from sections of rod to produce nipple outlets. Parts were then welded together to form the finished tank, which measures eight feet long, 44 inches high, and 1¾ inches wide.

For more data circle **5** on Reader Service Card

time is money...

ELECTROPOLISH... AND SAVE IT!

Electro-Glo electro-polishing concentrates mean savings to you in Time, Labor and Production Costs. Brightens, smooths and deburrs in one simple operation.

Copper Alloys.....ELECTRO-GLO #200
Austenitic Stainless Steel ELECTRO-GLO #300
Martensitic Stainless Steel ELECTRO-GLO #400
Carbon Steel..... FERRO-GLO #500

WRITE FOR DETAILS AND NEAREST DISTRIBUTOR

Electro-Glo COMPANY
1430 S. TALMAN AVE.
CHICAGO 8, ILLINOIS

For more data circle **190** on Reader Service Card

Users all agree . . . Hammond Variable Speed Polishing and Buffing Lathes set the standard for smooth, dependable, versatile and continuous production. You simply turn the handy dial control to any point between 1500 and 3000 RPM . . . instantly the Lathe adjusts to conform to your spindle speed selection. You move from one speed to another without breaking stride. Polishing and "cut down" — buffing — satin finishing. Advantages are endless. Available with one or two independent spindles.

America's most complete line of Polishing and Buffing Lathes—up to 50 HP. Write for catalog today.

HAMMOND MODEL VRO
VARIABLE SPEED POLISHING
AND BUFFING LATHE

Hammond Machinery Builders INC.

1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

For more data circle 191 on Reader Service Card

Special Reports On Finishing

NUMBER II—Paint Base, Corrosion-Resistant Finishing with Iridite®

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002" max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a good paint base and decorative finishes for non-ferrous metals. However, continued developments have been so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can obtain proper surface preparation for painting and increase product durability with a single multi-purpose chemical pretreatment. Report I on decorative, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, it is an accepted fact that metal surfaces should be prepared before painting to make possible an efficient paint system. Naturally, this preparation should provide for good initial paint adhesion. Chemical treatments have proved extremely effective in this respect, particularly those of a neutral or preferably acid nature. Further, to be most efficient, chemical treatments should provide a non-porous barrier to maintain adhesion by sealing the metal from the paint and moisture. They should also provide a self-healing film which prevents lateral corrosion in the event that bare metal is exposed through scratching.

The Iridite chromate conversion coatings meet all these requirements. Iridite is a chemical conversion treatment for surface preparation. It provides initial paint bonding by molecular adhesion. It is acid in nature and produces a film that is gel-like and non-porous in structure. Thus, the Iridite film effectively seals the metal from the paint and from moisture penetration. Because the film contains certain relatively soluble constituents, it will protect areas scratched through to bare metal and prevent lateral corrosion. This is accomplished by a gradual leaching of these constituents into the damaged area.

Further, because of its gel-like, non-crystalline nature, the Iridite film will not affect the appearance or texture of the paint film, nor will it dust or powder to

(Adv.)

Non-Ferrous Metals

mar the painted surface. Because the film is non-porous, paint coverage is increased, thus substantial savings in paint costs will be realized. In addition, treated parts may be stored for long periods of time prior to painting without the risk of entrapped moisture causing blistering when painting.

Iridite chromate conversion coatings are widely used with equal ease and success under both baked and air-dried paint systems. While the actual adherence properties of the Iridite film do not increase appreciably with its thickness, corrosion protection does. The protection of the Iridite film is proportionate to its thickness and should be taken into consideration when selecting the Iridite to meet your needs. However, it is sometimes necessary to sacrifice maximum corrosion protection for appearance when a finished part is to be only partially painted. For example, it may be desirable to use a thin, clear, bright Iridite film if the unpainted areas must present a chrome-like appearance. A typical case is that of instrument housings on which the exterior is painted and the inside left unpainted.

On the other hand, if all surfaces of the product are to be painted and maximum corrosion protection is required, the heavier and most protective Iridite films should be used. For example, all surfaces of zinc die cast fruit juicers are finished with a highly protective Iridite film prior to painting to provide maximum resistance to the corrosive action of fruit juices.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. In addition to providing an excellent base for paint, the Iridite films also have high decorative value when used as final finishes in themselves.

These films can produce a wide variety of pleasing appearances including clear bright, iridescent yellow, bronze, olive drab and brown. In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to their functions as protective and decorative finishes, and as bases for organic finishes and bonding compounds, Iridites have low electrical resistance. Some can be soldered and welded. The film does not affect the dimensional stability of close tolerance parts.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 East Monument Street, Baltimore 5, Maryland.

(Adv.)

For more data circle 182 on Reader Service Card

PRODUCTION FINISHING

Model 18

Model 7

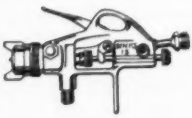
GENERAL FINISHING

Model 19

Model 29

TOUCH-UP

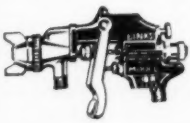
Model 26



Model 15

AUTOMATIC APPLICATION

Model 21



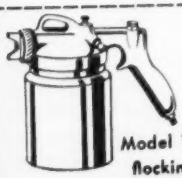
Model 18R

HEAVY FLUIDS & COATINGS

Model 7E2

Model 18D

SPECIAL PURPOSE



Model 171
flocking

Model 190
dusting—drying

Model 31
flow gun

One of these Binks spray guns will apply your finishes or coatings... *FASTER...BETTER*

Fine finishes...plastics...heavy-bodied coatings—production line tempo or occasional touch-up...there's a Binks spray gun and nozzle combination that is just right for your job...will give you better coverage with fewer passes.

Binks complete spray gun line is the result of having wrestled with the spray application of every imaginable fluid since Joseph Binks invented the first practical spray gun over 50 years ago. It is the result of a shirt sleeve knowledge of your finishing and coating problems and how to solve them.

Free analysis and engineering help

Whether you plan to establish a new finishing department or want more production of higher quality from your existing operation...call Binks' nearest Branch Office or write direct to the address below. Valuable free analysis and engineering assistance is yours for the asking.

P.S. Binks can supply everything your finishing department may require ...from spray guns to complete, engineered installations.

Ask about our spray painting school
Open to all...NO TUITION...covers all phases

694

Binks
EVERYTHING FOR
SPRAY PAINTING

SPRAY BOOTHS

AIR COMPRESSORS

ACCESSORIES

Binks Manufacturing Company
3118-40 Carroll Ave., Chicago 12, Illinois

REPRESENTATIVES IN PRINCIPAL U. S. & CANADIAN CITIES • SEE YOUR CLASSIFIED DIRECTORY

For more data circle 193 on Reader Service Card

New Equipment, Materials, Processes

Cleaning

Polishing

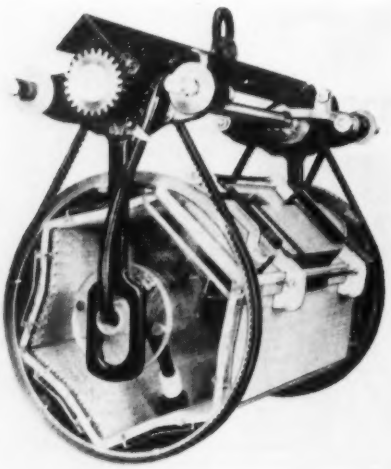
Plating

Paint Finishing

Belt-Driven Plating Cylinder

A Mercil-type barrel plating cylinder incorporating a newly designed belt drive that is said to minimize maintenance has been announced by Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

The plating cylinder is driven by a standard cogged V-belt. There are no moving parts on the cylinder; thus wear is reduced, H-VW-M reports. The motor can be mounted on the hanger superstructure to offer greater flexibility in use on existing equipment. Construction of the cylinder makes it suitable for use in any normal preparation or plating solution.



Mercil-Type Belt-Driven Plating Cylinder

The barrel is designed for total submersion during the plating process. Double flexible dangler contacts are used, carrying current into the cylinder through both ends. Cylinder hangers are completely insulated from contacts and hanger pins.

Dangler contacts are furnished with a removable control knob. The cylinder is bussed to carry 1,000 amperes.

Other design features reported by H-VW-M for the Mercil cylinder include positive cylinder rotation, provided by stainless steel pins in the driving pulley and a spring-type cover clamp to assure solid clamping and a tight cover throughout the plating process.

The cylinder is available in Plexiglas, Melamine and Tempron in all standard models and sizes. Plexiglas cylinders are molded in one piece and are ribless. Inside tumbling surfaces are convex to strengthen cylinder and facilitate tumbling.

For more data circle **6** on Reader Service Card

Paint Stripper

The Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn., has introduced a non-flammable paint stripper.

Called Quick Strip No. 8, this liquid paint remover strips many types of paint, lacquer and enamel quickly, without damaging the base metal, it is stated.

To use, the article to be stripped is dipped into Quick Strip No. 8 until the coating lifts. The article is then removed from the tank and flushed with water to rinse away the loosened paint. For spray or brush application, Quick Strip No. 8T is recommended. This is a heavier-bodied material; thus it will cling to the painted surface until the paint is lifted. The loosened paint is then flushed off with water. Both of these materials are used at room temperature.

Descriptive literature is available from the Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

For more data circle **7** on Reader Service Card

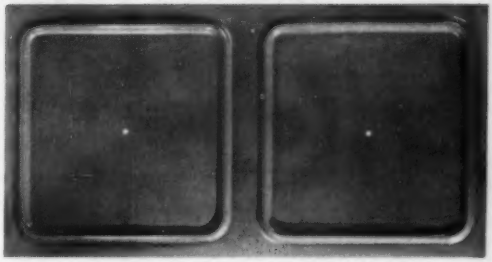
★ ★ ★

Tank Liner

H. N. Hartwell and Son, Inc., Boston, Massachusetts, has announced development of the Expansion Liner Sheet, a tank liner with built-in thermal compensation.

Constructed of Boltaron 6200 unplasticized polyvinyl chloride (type I), the Expansion Sheet combines the corrosion-resistance of PVC with greater allowable temperature differentials. The Expansion Sheet was designed to absorb the expansion and contraction of this rigid tank liner by movement of corrugations built into the individual sheets. These corrugations fully compensate the entire sheet in all directions, the manufacturer states.

The individual sheet (30 by 60 by 3/16 inches) allows lining tanks of almost unlimited size, since expansion and contraction is confined to the individual sheet. Problems of buckling, warping and other distortion are virtually eliminated, it is stated. The Boltaron Expansion Sheet can be used with tanks of wood, concrete, metal, or other materials. It can be used in any size tank, square or rectangular.



PVC Tank Liner: expands, contracts, no cracks

The Expansion Sheet Bulletin (Bulletin No. 4-EL) is available from H. N. Hartwell, Industrial Plastics Div., Park Square Bldg., Boston 16, Mass.

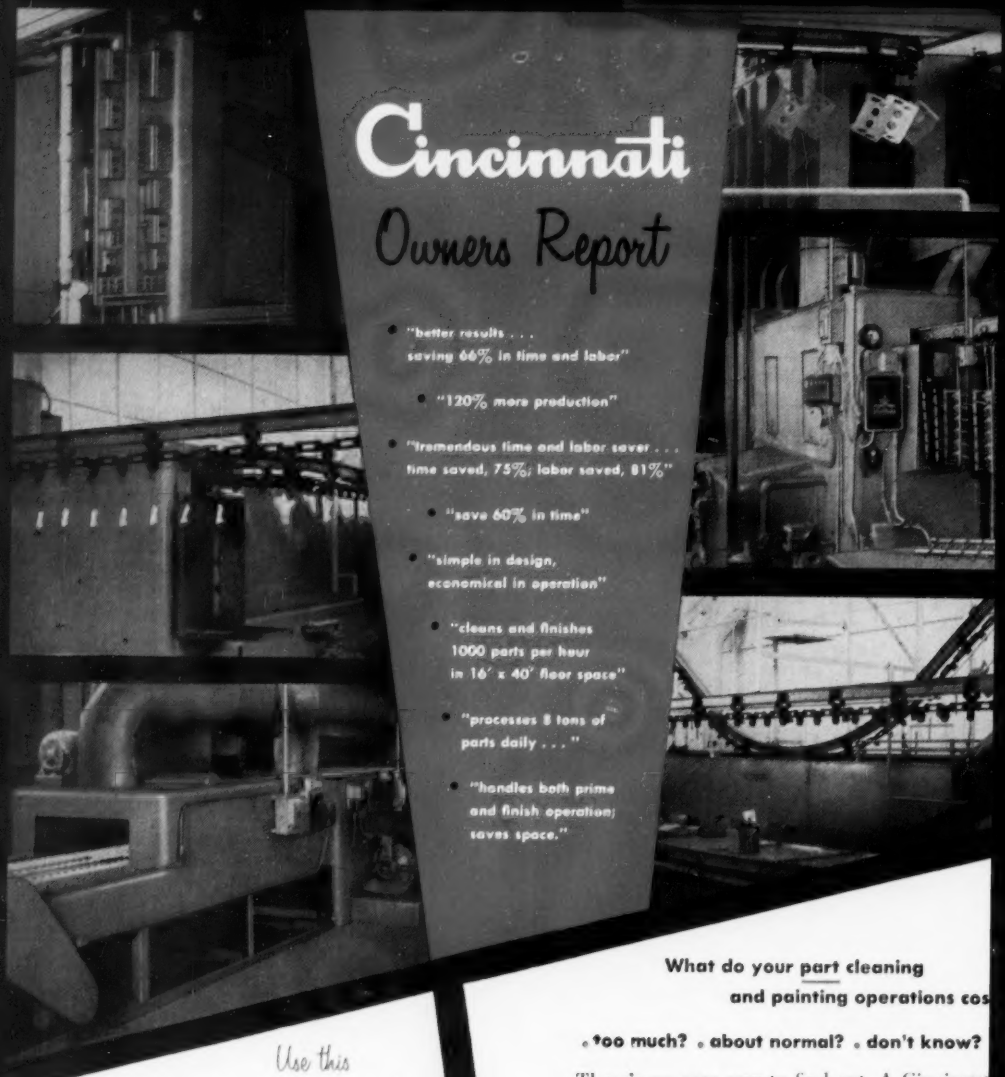
For more data circle **8** on Reader Service Card

★ ★ ★

Portable Spray Painting Apparatus

A portable spray painting apparatus has been introduced by The DeVilbiss Company, Toledo, Ohio.

Designed to spray commonly used materials, such as enamels, lacquers, house paints, wall paints, multi-color and latex or rubber-base paints, the apparatus is available in four packages. Where small quantities are to be sprayed, DeVilbiss recommends the NCE compressor and the P-QGA cup-type spray gun with air hose. It is available with or without motor on the compressor. For use with large quantities, the painter should select an NCE compressor with a two-gallon pressure tank, hose and the P-CGA spray gun. It is available with or without compressor motor.



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New Processes, Materials

The NCE compressor produces a maximum pressure of 40 p.s.i. It has permanently lubricated ball bearings. The compressor has direct drive, eliminating belts and pulleys. The shaft connecting the motor to the compressor is ½ inch. It will operate from a regular electric outlet.

The compressor is especially suited for the continuous service required in spray painting. It has a floating mount to give perfect alignment and quiet operation.

The P-QGA gun is designed for general spray work. It has a quart metal cup. The spray pattern is wide and fan-shaped for full coverage and easy overlapping. The nozzle is of the external-mix type. It is a pressure feed model, has a full size gun grip handle and a two-finger trigger. Fluid flow is regulated by a valve at the back of the gun.

The P-CGA spray gun is a combination model for both suction and pressure feed. The feed selection is made by a valve on the gun body. The suction feed is used for application of light-bodied materials while the pressure feed is used for spraying heavier materials. This gun, in addition to its use with the pressure tank, may be used with a cup for spraying smaller quantities of materials.

Additional information may be obtained from The DeVilbiss Company, 300 Phillips Ave., Toledo 1, Ohio. Write for bulletin B-1001.

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DIALS ASH TRAYS CHASSIS

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Uniformly high opacity during an entire run

For screen and ink information, please write Dept. P6

THE NAZ-DAR COMPANY
461 Milwaukee Ave. • Chicago 10, Ill.
inks varnishes lacquers silks
screen plates squeegees films

For more data circle **195** on Reader Service Card

Washing Machine Spray Nozzle

Spraying Systems Co. has announced a large-capacity flat spray nozzle. Identified as the 2-U-Veejet, this nozzle's capacity ranges from 73 g.p.m. at 15 p.s.i. to 330 g.p.m. at 300 p.s.i. It is supplied in two types of spray angle. The nozzle is designed free of cores, vanes or obstructions of any kind and is made with a 2-inch male pipe connection. Designed for heavy duty cooling and washing operations, the 2-U-Veejet is also suitable for other applications where a large capacity flat spray is desired. For complete information, write for Data Sheet 6868 to Spraying Systems Co., 3201 Randolph St., Bellwood, Ill.

The 2-U-Veejet Flat Spray Nozzle

For more data circle **10** on Reader Service Card

★ ★ ★

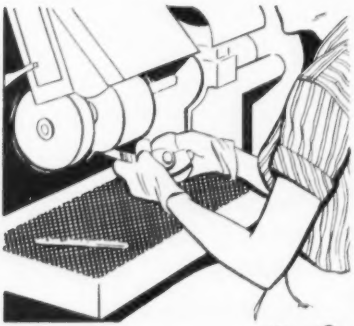
Ribbed Round Anodes

Metal & Thermit Corporation, Rahway, N. J., has introduced two ribbed round anodes. These anodes are designed to be used where greater surface area is needed. They are also said to keep trivalent chromium from building up in solutions where cathode area is large.

In addition, these anodes resist warping, run cooler at higher current densities, provide high conductivity and even current distribution, and minimize chromate formation and anode wear, the manufacturer states.

These anodes are available in any length and are furnished with knife-

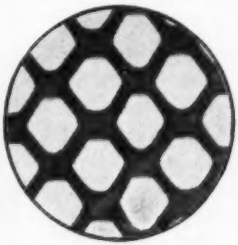
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



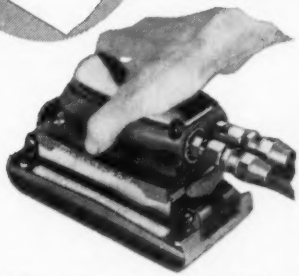
RESEARCH PRODUCTS CORPORATION

Dept. 76, Madison 10, Wis.

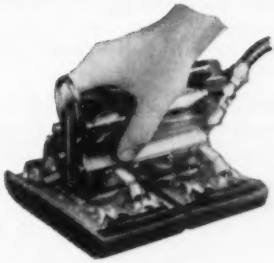
For more data circle **196** on Reader Service Card

Which Model for YOU?...

SUNDSTRAND AIR SANDERS

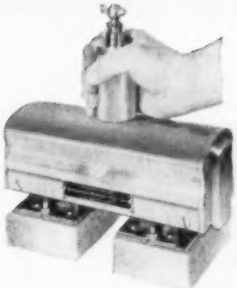


OS-700—new fast-action orbital sander. Single pad. Over 6000 cycles per minute. Removes material faster, easier. Built-in water attachment for wet sanding. 5 lb.

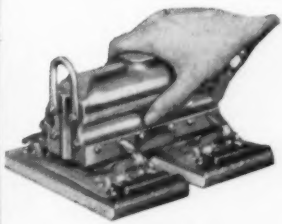


1000—light, fast, easy-to-handle straight-line sander. Big abrasive area. 2500 oscillations per minute. For wet or dry sanding. Palm lever controls both air and water. 7½ lb.

SP-101—versatile, single-pad, straight-line sander. 3000 oscillations per minute. Excellent for fine work on smaller pieces. 5 lb.



600—heavy-duty, straight-line model for sanding, pumice rubbing, or polishing. Sands wet or dry. 1100 oscillations per minute. 30 lb.



4000—9 lb., 2-pad, straight-line sander for longer, slower stroke. Built-in water attachment. 2100 oscillations per minute.

SUNDSTRAND MACHINE TOOL CO., Pneumatic Division, Rockford, Illinois

SUNDSTRAND

A name to remember in **AIR SANDERS**

For more data circle 197 on Reader Service Card

edge, wedge-type hooks. The anode body and hook are bonded for best conductivity.

For more data circle 11 on Reader Service Card

★ ★ ★

Vacuum Coating System

A vacuum system for laboratory, pilot plant, and limited production use has been announced by the Rochester Div., Consolidated Electrodynamics Corporation. Packaged as a unit, it was designed primarily for laboratory coating of various materials with vaporized metals. The unit is also useful for other purposes, such as degassing liquids, crystal pulling and growing, melting small metal samples, and degassing vacuum-tube electrodes.

Known as the Type LC1-14A Vacuum System, it incorporates a high-capacity pumping system which is said to reduce pumping time, and a complete line of standard accessories.

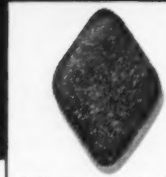
The standard pumping system consists of a four-inch fractionating diffusion pump and a 5-c.f.m. combination roughing and backing mechanical pump with vented exhaust. The pumps are operated by circuit breakers and are interlocked to prevent improper sequencing.

The work chamber, a 14 by 24-inch Pyrex bell jar, seats on a baseplate which has holes for vacuum-gauge sensing tubes, filament heating electrodes, and accessories.

The LC1-14A is complete with a

it's the SHAPE that counts!

ALL NEW... Speed-D-Burretts*
Controlled Size and Shape
ABRASIVE MEDIA for PRECISION BARREL FINISHING



4 Shapes to choose from

Outlasts other media as much as 10 to 1
Controlled grain size Aluminum Oxide bonded firmly with specially formulated synthetic rubber to allow finishing of precision parts hitherto impossible to barrel finish. Molded and cured to controlled hardness that assures long life, maximum cushioning yet gives desired cutting, honing or polishing action. May be used with any equipment.

New "Burretts" permit abrasive action in the most remote corners and recesses of delicate, precision parts. Will not chip or splinter into odd shapes that lodge in blind or threaded holes. Prevents broken chip damage to expensive parts.

*Pat. Pend.

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MEDIA AND COMPOUNDS • HANDLING EQUIPMENT

Service is our most important product. Use it!

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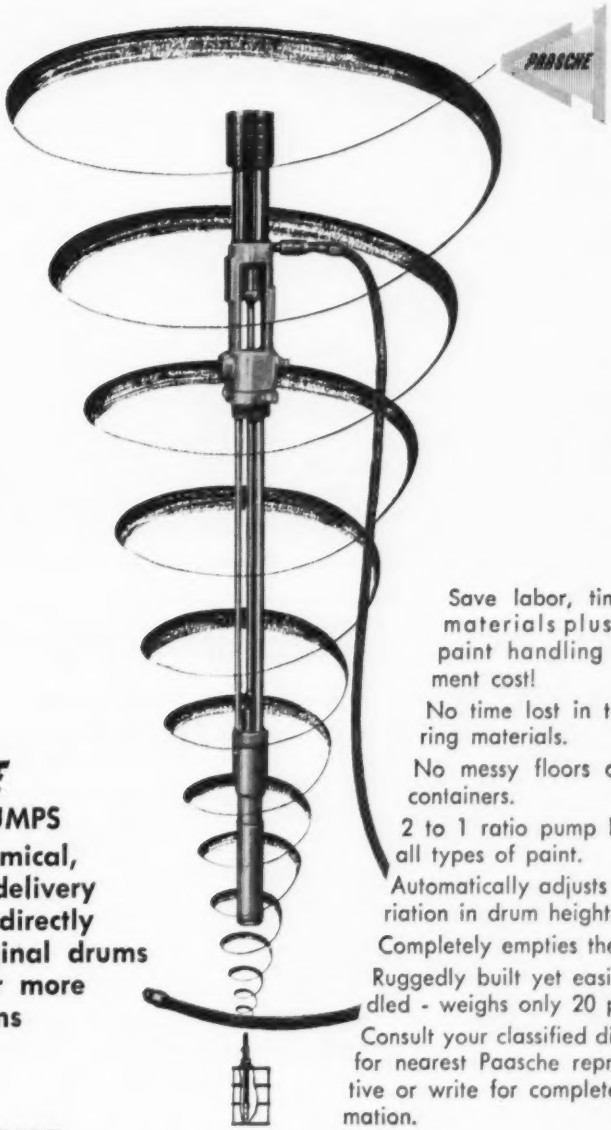
SPEED-D-BURR CORPORATION
PRECISION BARREL FINISHING
MT 60
THE WORLD'S MOST COMPLETE LINE OF PRECISION BARREL FINISHING EQUIPMENT & SUPPLIES

For more data circle 198 on Reader Service Card



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PAINT PUMPS
for economical, efficient delivery of paint directly from original drums to one or more spray guns

Save labor, time and materials plus lower paint handling equipment cost!

No time lost in transferring materials.

No messy floors or refill containers.

2 to 1 ratio pump handles all types of paint.

Automatically adjusts for variation in drum height.

Completely empties the drum.

Ruggedly built yet easily handled - weighs only 20 pounds!

Consult your classified directory for nearest Paasche representative or write for complete information.

PAASCHE AIRBRUSH CO.
A Division of Cline Electric Manufacturing Company
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roughing valve, a backing valve, an air-inlet valve, and a water-cooled combination valve and baffle above the diffusion pump to minimize back-streaming of oil vapors. All controls are mounted on the cabinet and are easily accessible.

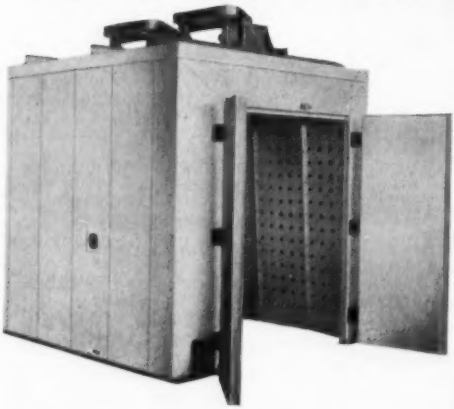
Available as standardized accessories are two larger pumping systems for providing shorter cycle times, an 18-inch bell jar, a hoist for lifting the bell jar, a jack panel, a liquid-nitrogen trap, and other items which greatly increase the system's versatility.

Additional information on the LC1-14A appears in Data Sheet No. 2-15, available from the Rochester Division, Consolidated Electrodynamics Corp., 1775 Mt. Read Boulevard, Rochester 3, New York.

For more data circle **12** on Reader Service Card

Consolidated Electrodynamics Vacuum Coater

You're SURE of UNIFORM Drying—FAST



Made in wide range of standard electric-, gas-, oil- or steam-heated, cabinet, rack or truck types and in special batch or conveyor types.

in

ROCKWELL

Recirculating

OVENS

Uniform distribution of controlled, high velocity, recirculated, heated air assures faster drying or baking at precise temperature.

Investigate the oven with the built-in heating "know-how." Write for Catalog.

W. S. ROCKWELL COMPANY

2907 Eliot Street Fairfield, Connecticut

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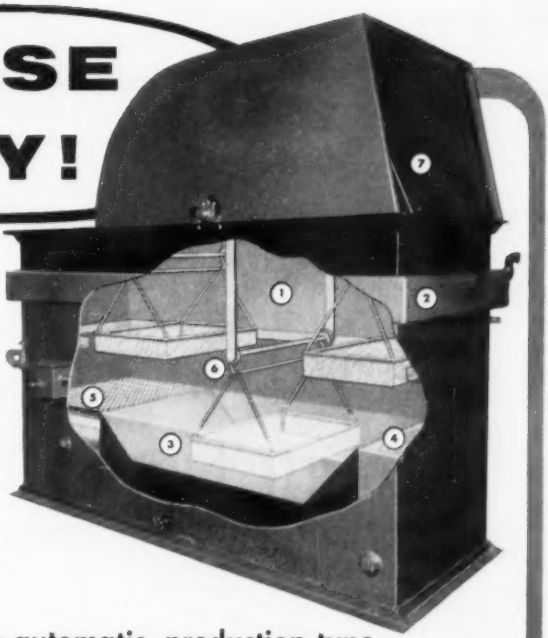

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ROTOMATIC VAPOR DEGREASER
WITH LIQUID DIP

Combination of automatic time cycle, liquid solvent dip, and vapor degreasing — all in one unit. Cutaway view illustrates construction and operation: **1**—Vapor degreasing area; **2**—Condensing water jacket; **3**—Cool rinse washes off chips and insolubles; **4**—Reso-Kleen sump supplies clean solvent to rinse sump; **5**—Boiling sump generates vapor; **6**—Rotating reel for baskets, with timed cleaning cycle; **7**—Loading and unloading point. Capacities from 1800 to 4000 pounds per hour.

NOW! This automatic, production type degreaser can be yours on purchase or lease

. . . for less than 15c per operating hour!

Automatic, high production degreasing on purchase or lease — at very low cost! It can be yours for less than 15c per operating hour!*

This degreaser handles a variety of small metal parts . . . Has adjustable control time cycle . . . Has continuous one-man operation . . . Assures complete cleaning and drying in blind holes and recesses. Available with tumblers for parts that tend to nest.

This machine is one of a complete line of Phillips degreasers. Your Phillips representative can help you determine your needs. Call him today — or write, wire or phone direct.

** Figures are for Model 60RM — Capacity 1800 pounds per hour.*

PHILLIPS MFG. CO.
3457 W. TOUHY AVE., CHICAGO 45, ILLINOIS
AMbassador 2-6020

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ENGINEERED SERVICE

PHILLIPS

For more data circle 201 on Reader Service Card

Corrosion-Preventive Coating

Profilm, a silicate-modified coating recently announced by Allied Porcenell, Inc., 851 S. Market St., Waukegan, Ill., has the appearance of paint, is applied by conventional spray equipment, yet will dry to the touch on most applications in a few minutes, the manufacturer states. It is designed for use in corrosive atmospheres.

A development of a research company owned jointly by Poor & Company, Chicago, and Youngstown Sheet & Tube Company, Youngstown, Ohio, Profilm is available in colors, black, clear, white and metallics, in both baking and air-dry grades. It can be applied, the manufacturer states, to virtually any coatable surface, including metal (ferrous and non-ferrous), masonry, wood and asbestos. Because of its essentially inert composition, Profilm is said to provide a uniform, continuous and low porosity film which lends resistance to a wide variety of chemical environments.

Present and potential applications, as cited by Allied Porcenell, include production finishing of items such as farm equipment, home appliances, shipping containers, signs and pole hardware, and industrial maintenance uses.

Rapid drying characteristics of the coating often make it possible to apply successive films without moving scaffoldings. Baking grades similarly

Testing For Causes of Rough Deposits?

9. Run a plating test ...

By using a testing procedure it will be ... determine chemical adjustment, addition agent control and bath treatment necessary to return the bath to normal plating. Such testing may also indicate the need for greater filtering capacity or for continuous filtering. If filtering is required on a laboratory scale to obtain satisfactory test results then filtering is required to obtain quality production plating.

Filtering Methods

... method for filtering plating baths with a

FREE! Your guide to better plating

This technical article — "The Use of Filters in Electroplating" — written especially for you by Mr. J. B. Mohler, Finishing Consultant is available to you for the asking. Write for your free complimentary copy today.

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ALSOP ENGINEERING CORPORATION

1201 Keen St., Milldale, Connecticut

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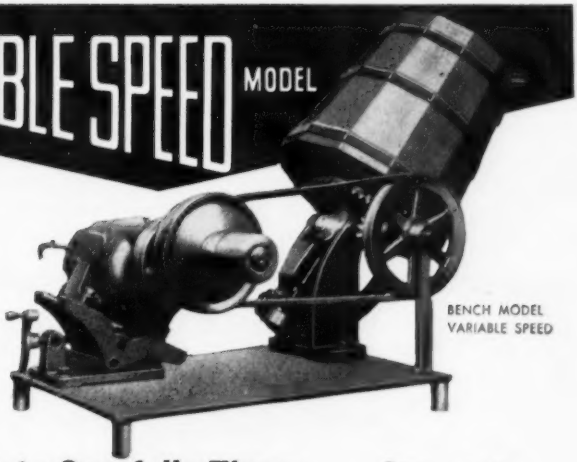
INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL



BENCH MODEL
VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5A—Single Speed

No. 6—Single Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive—*while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

No. 5—Variable Speed

No. 5A—Variable Speed

No. 6—Variable Speed

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

134 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

For more data circle 203 on Reader Service Card

cure on short cycles to speed production finishing, it is stated. Overspray reportedly will dry before it can cause damage to clothing, autos or other adjacent surfaces.

For more data circle **13** on Reader Service Card

★ ★ ★

Chromate Coating

The Chemical Corp., 54 Waltham Ave., Springfield, Mass., has announced a chromate conversion coating for use on copper and copper alloys to prevent "spotting out" and tarnish that occur on these materials, especially under humid conditions.

Called "Luster-On NS," it can be used in water solution on buffed copper or brass surfaces, and on thin electroplated brass or copper deposits, without destroying the luster.

Baths used in applying this material are operated at 70 to 90 deg. F., and products are immersed for 6 to 20 seconds. The usual procedure is to treat parts with this material immediately following the plating operation.

Luster-On NS has been found to prevent tarnish and eliminate finger printing in assembly operations and to improve adhesion where it is necessary to lacquer non-ferrous surfaces.

For more data circle **14** on Reader Service Card

★ ★ ★

Emulsion Cleaner

An organic emulsion cleaner formulated to remove heavy oils, greases and soils has been announced by Mitchell - Bradford Chemical Co., Wampus Lane, Milford, Conn.

UNI-WASH DUST COLLECTORS

Compact, complete recirculating Water-Type Dust Collectors for industrial processing dusts. Dirt is collected as wet sludge which may be carried away automatically. No moving parts. Extremely efficient for grinding operations. Eliminates danger of explosion from magnesium and aluminum dust. Proven in foundries. Standard Units available.

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5761 RUSSELL ST. • DETROIT 11, MICH.

For more data circle **204** on Reader Service Card

More complete corrosion of anodes by using the HARSHAW ANOCAP

The Harshaw Anocap is a rubber electrode assembly protector. Easily slipped over the anode hook and down over the anode top, the Anocap enables you to corrode an additional 2 to 4 pounds of metal from each anode.

Many more time and money-saving benefits are yours in the inexpensive Harshaw Anocap:

1. More usable metal—less recasting or scrap loss.
2. Shorter stub—easily placed directly into anode saver basket and consumed.
3. Anode hook protected, thus giving it longer life.
4. With Anocap in place on hook, anode can easily be screwed on or removed from hook.
5. Anocap pays for itself during first use.
6. Entire anode can be below solution level. Shorter anodes can be used and thus a larger quantity of anodes can be obtained from any given poundage of anode metal.
7. When using Anocaps, solution level of bath is not critical.
8. Anodes can be used with any standard oval anode.

You'll make new savings on anodes tomorrow if you order Harshaw Anocaps today. Send or call in your order to the nearest Harshaw sales office.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street • Cleveland 6, Ohio

Chicago 32, Ill. — Los Angeles 22, Calif.
Cincinnati 13, Ohio — Detroit 28, Mich.
Cleveland 6, Ohio — Philadelphia 48, Penna.
Houston 11, Texas — Pittsburgh 22, Penna.
Hastings-On-Hudson 6, N. Y.

HARSHAW

For more data circle 205 on Reader Service Card

Designated Emulsion Cleaner No. 26, this material can be used prior to alkaline cleaning to reduce cleaning time and prolong the life of the alkaline cleaning solution. It is also recommended for removing buffing compounds and for cleaning heavy machinery and large objects. Descriptive literature on this product is available from the Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

For more data circle **15** on Reader Service Card

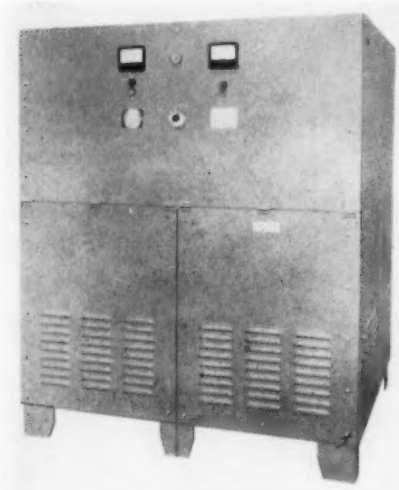
★ ★ ★

Silicon Rectifier

A silicon rectifier has been introduced by the Richardson-Allen Corporation, 116-15 Fifteenth Avenue, College Point, Long Island, New York. With d.c. output of 10 to 65 volts, 400-2000 amperes, this model has forced air cooling with fan and silicon diodes shrouded to ensure maximum airflow. Regulation is plus or minus 1 per cent automatic current for load and plus or minus 5 per cent a.c. line change. Three units are used in parallel or series for higher voltage or current, as required. Control is by saturable core reactor and high-gain magnetic amplifiers. With a.c. input of 440 volts plus or minus 10 per cent, 3 phase, 60 cycles, it can be used for any application requiring continuous duty, or where constant current is required. The life of silicon diodes does not show any change of forward resistance with use; therefore no aging or reduction of output is expected.

Silicon power rectifiers for plating are available in ratings up to 500 kws.

For more data circle **16** on Reader Service Card



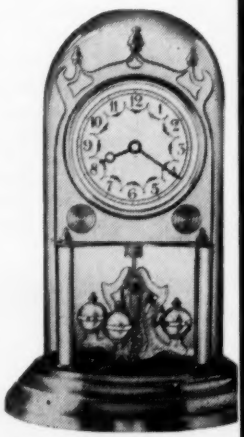
Richardson-Allen Silicon Rectifier: no aging

★ ★ ★

Brass Plating Process

Exact control of brass plating color is the outstanding feature of a plating process recently installed by Albany Plating Co., Chicago, Ill.

Known as "Albanizing," the process is beneficial to manufacturers of products having several brass-finished parts. With this method, color control can be maintained even on parts plated at widely different times, thus permitting interchangeability, the manufacturer states.



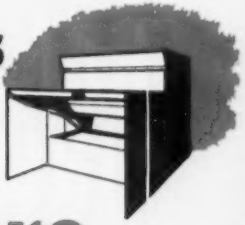
Clock brass plated by "Albanizing" process

The Albanizing method is effective on all types of metals, and prevents "bleeding out" on porous metals. Products up to 33 inches square can be "Albanized." Choice of a wide variety of

For more data on advertisement on opposite page, circle **206** on Reader Service Card——————→

Profits Increase

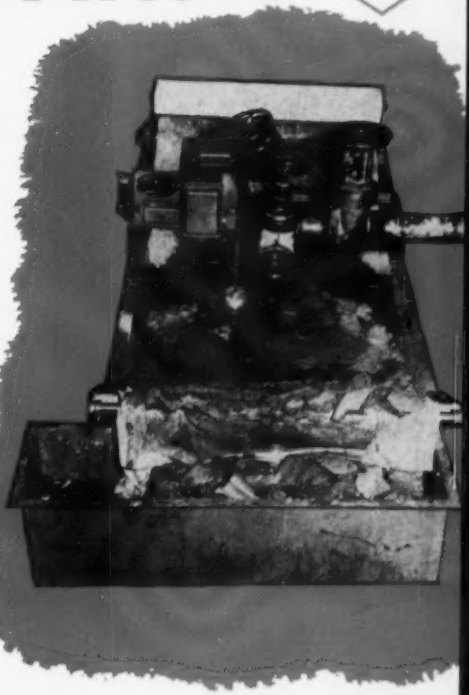
WHEN WASH WATER BOOTHS ARE EQUIPPED WITH



Delpark *WASH WATER* Filters

Wash water spray booths can be operated continuously when equipped with Delpark Filters. Costly shut-downs for cleaning are eliminated. Deactivated paint from the overspray is filtered from the wash water before it can be recirculated causing plugged nozzles or before it settles in the tank causing water displacement. The savings made by using Delpark Filters mean important profits for you through reduced maintenance costs and increased booth efficiency.

There's a Delpark representative near you to help with your specific problems. There's no obligation. Write today for further information.



Delpark ... FIRST IN FILTRATION ADVANCEMENTS

INDUSTRIAL FILTRATION COMPANY

166 INDUSTRIAL AVENUE LEBANON, INDIANA

DAYCO HAMMER FINISHES

For uniformity of pattern, depth of gloss, permanency, toughness, chip resistance; all features that help to make sales and build a quality reputation for your products, specify DAYCO baking or air dry Hammer finish.

Backed by half a century of "know how", Dayco finishes have a quality reputation you can depend upon. We have, or will produce for you, the special finishes your production calls for.

- Clear and colored Lacquers
- Primers
- Surfacers
- Baking Enamels
- Handle Finishes
- Removers
- Screening Materials (Lacquers—Vinyls —Synthetics)
- Undercoats

Fiftieth Anniversary
1906 1956

DAYCO DAY SINCE 1906 FINISHES

JAMES B. DAY & COMPANY

1872 Clybourn Ave. . . Chicago 14, Illinois

brass finishes includes gold color or lemon yellow in bright, scratch brush, dull, satin, and other effects.

Sample parts will be "Albanized" without cost. Address samples to Albany Plating Company, 464 W. 33rd St., Chicago 16, Ill.

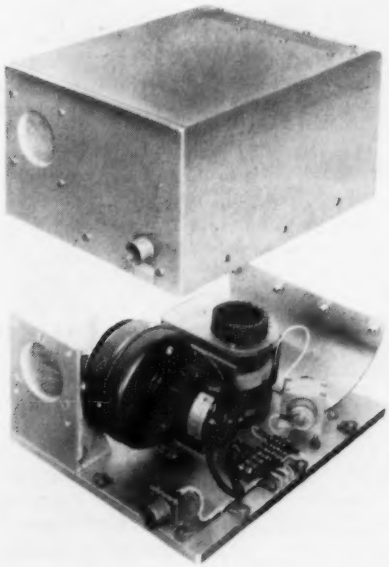
For more data circle **17** on Reader Service Card

★ ★ ★

Ultrasonic Cleaning Unit

An ultrasonic transducer designed for use in metal cleaning and allied operations has been announced by the John B. Moore Corp., Nutley, N. J. The unit is called the "Telephonics Tank-Mounted Transducer."

This ultrasonic unit is designed to provide a source of energy for uses where a larger capacity is needed, such as conveyorized operations and cleaning of larger parts or large amounts of small parts.



Electrosonic Transducer with cover removed

This transducer is of the magnetostrictive type. It is recommended for dual mounting on production-line tanks and for single mounting on portable tanks.

The Electrosonic Generator also can be used in removing mill scale and corrosion from parts in pickling acids or alkaline solutions. It is useful in cleaning intricate and delicate parts.

For more data circle **18** on Reader Service Card

★ ★ ★

Redesigned Conveyor Trolley

A redesigned trolley is said to increase efficiency of cable conveyor systems manufactured by Tipp Manufacturing Co., Tipp City, Ohio. It also permits easier installation, adjustment and maintenance, the manufacturer states.

Tipp Conveyor Trolley

The trolley is standard for all loads and conditions within the range of Tipp cable conveyors, with interchangeable wheels of three load-bearing capacities being used as required.

Side plates of the trolley have been redesigned for simplicity, strength in suspension and ease of assembly.

Two standard attachments, which together will provide the basic suspension for most applications, are available with the trolley. These attachments are secured by single bolts through holes at the bottom of the side plates, and may be put on or taken off the trolley, or adjusted, without dis-

←———For more data on advertisement on opposite page, circle **207** on Reader Service Card

turbing the trolley assembly. The stud attachment has a vertical hole which accommodates a ⅜-inch stud from which a variety of stationary or rotating carriers may be suspended. The pendant attachment has a horizontal ⅜-inch hole through which a clevis pin is inserted. Both attachments may be bolted rigidly or allowed to swing.

For more data circle 19 on Reader Service Card

Spray Washing Compounds

Magnus Chemical Company, Inc., has announced three "non-foaming" spray-washing compounds.

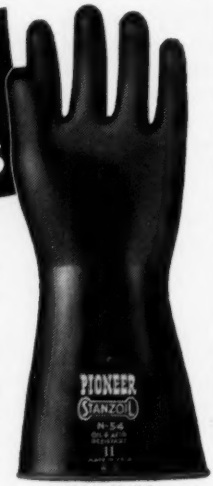
These compounds contain a non-foaming wetting agent that causes maximum wetting of dirt deposits without foaming. Regardless of concentration and high temperature, the solution will not foam, it is stated.

Magnus "X-3" compounds are fortified with higher concentrations of wetting agent. Their built-in hard water control prevents scale formation, the free-rinsing properties leave surfaces water-break free and their cleaning action helps produce cleaner work.

Obtainable in three strengths for hard, medium and soft metals, these "X-3" Spray Washing Compounds, when used according to directions, do not attack metal surfaces and present no hazard to equipment or personnel, the manufacturer states.

Magnus 91X3 is recommended for cleaning aluminum. Magnus 92X3 is formulated for cleaning more chemically resistant alloys of aluminum plus

Long-Wearing Liquidtight Stanzoil® Gloves



Of milled Du Pont Neoprene to resist oils, acids, caustics, greases, solvents, chemical and abrasive materials. Permanently satinized inside with non-slip grip outside. Light, medium and heavy weights in sizes to fit every hand. PIONEER will help you select the right glove for your job from the complete PIONEER line.

No. N-54

The PIONEER Rubber Co.
Attn: Hand Protection Clinic
285 Tiffin Road
Willard, Ohio, U.S.A.

Please send me:

- ☐ The name of my nearest PIONEER Glove Distributor.
- ☐ 1956-57 PIONEER Industrial Glove Catalog.
- ☐ Your glove recommendation for job described in enclosed letter.

Firm _____

Address _____

City _____ Zone ____ State _____

Signed _____

For more data circle 208 on Reader Service Card

Schaffner Bias Buffs

your answer for economical performance

- TAILOR MADE FOR YOUR TOUGHEST BUFFING OPERATIONS
- FULLY VENTILATED
- COOLER RUNNING
- LOW COMPOUND CONSUMPTION
- FEWER SECTIONS NEEDED
- GIVES LONGER LIFE

The buff you select is all important—it will mean longer buff life and greater production from a buff wheel.

Specify and buy the proven Schaffner Metal Center Air Cooled bias (type) Buff, and don't be satisfied with imitations. You'll find Schaffner buffs last longer, consume less compound and reduce rejections.

Write us. We'll run a test for you in your own plant and prove our claims.

"Schaffner Bros. make things Shine"
Paul — Bob — Gus

Schaffner

MANUFACTURING COMPANY, INC.

SCHAFFNER CENTER • ROSEWOOD 1-9902 • EMSWORTH, PITTSBURGH 2, PA

• TRIPOLI COMPOUNDS • CHROME COLORING ROUGE • GREEN ROUGE • JEWELERS' ROUGE • CROCUS COMPOUND • STAINLESS STEEL COMPOUNDS • ALUMINUM BUFFING COMPOUNDS • ALL-PURPOSE BUFFING COMPOUNDS • WHITE COLORING COMPOUNDS • NICKEL BUFFING (LIME) • EMERY CAKE • PLASTIC BUFFING COMPOUNDS • TALLOW GREASE STICK • PUMICE GREASE STOCK • POLISHING WHEEL CEMENT • STEEL POLISHING COMPOUNDS

COMPOUNDS MADE IN BAR, SPRAY OR PASTE

For more data circle 209 on Reader Service Card

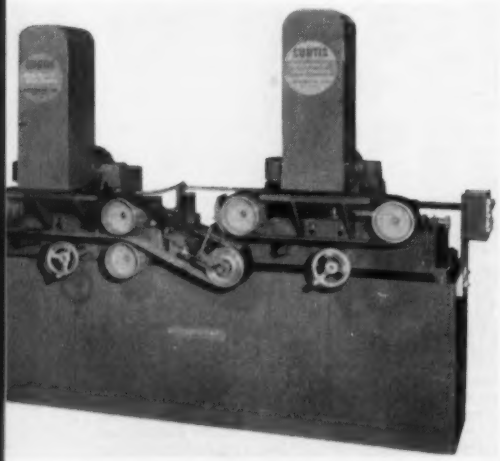
brass, bronze, copper, steel and mixed alloys of these metals. Magnus 94X3 is for heavy-duty cleaning of steel.

For complete information on these materials, write for Bulletin No. 73. Department PFD, Magnus Chemical Company, Inc., Garwood, New Jersey.
For more data circle **20** on Reader Service Card

★ ★ ★

"Double-Side" Abrasive Belt Machine

Model 304C2 Double-Side Grinder, manufactured by the Curtis Machine Corporation, Jamestown, New York, incorporates a turn-over transfer unit between conveyorized abrasive belt heads. This version of the Curtis "Straight-O-Matic" machine will grind, polish or deburr both sides of a workpiece in one handling of the stock. The turn-over mechanism allows grinding and polishing of pieces of different sizes and shapes. It can be engineered to accommodate practically any piece, the manufacturer states.



Curtis "Double-Side" Abrasive Belt Machine

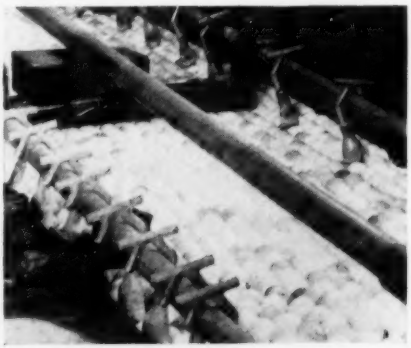
It uses abrasive belts 4 inches wide and 54 inches long, and incorporates a 1½-h.p. motor and two ¼-h.p. infinitely variable-speed conveyor drives.
For more data circle **21** on Reader Service Card

★ ★ ★

Fume-Retarding Spheres

Hollow polyethylene spheres that float on top of plating solutions to suppress fumes have been introduced by Cosom Industries, Inc., Minneapolis, Minnesota.

Ordinarily gas bubbles rise from a plating solution to the surface, where

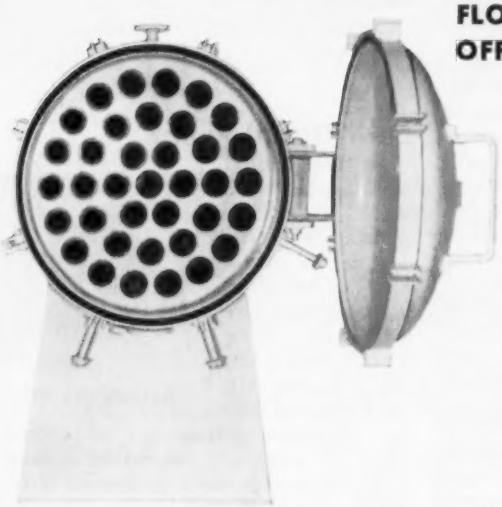


Cosom Polyethylene Spheres Retard Fuming

they burst, throwing a fine, corrosive mist into the air. These hollow plastic spheres form an even blanket over the surface of the tank and retard this condition. A dense blanket, sufficient to control the escape of acid fumes and minimize splashing, requires about 55 spheres per square foot. The spheres also help to maintain a more uniform temperature in the plating solution.

Bakelite polyethylene was selected as the material for these spheres because of its resistance to acids and other chemicals. It also has strength and flexibility over a wide temperature range. The service life of the spheres is almost indefinite, the manufacturer states. Further information is avail-

New!...TUBULAR FILTERS
By INDUSTRIAL



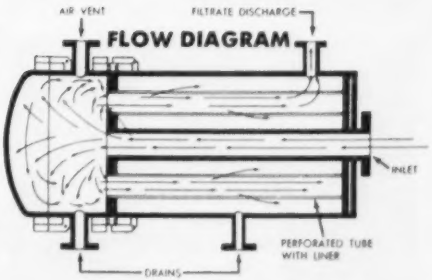
FLOW FROM INSIDE TUBE OFFERS NEW CONVENIENCE

- ★ Unequaled simplicity of maintenance.
- ★ Solids can be recovered in dry form.
- ★ Liners are easy to replace and inexpensive.
- ★ Ideal for intermittent or continuous operation.
- ★ Chamber can be emptied without losing cake.
- ★ No unfiltered "heel."
- ★ Can be used with or without pre-coat.
- ★ Ideal for polishing . . . as a trap filter . . . and as a scavenger for larger filters.

NEW SIMPLIFIED OPERATION

The filter is prepared for use by simply rolling flat sheets of filter paper and inserting them in the tubes, which are designed to force the paper snugly against the tube wall.

EASY TO CLEAN . . . Filter papers are simply withdrawn and replaced. Even the tubes are easy to remove, held in place by a simple rubber O-Ring. Except for the cover there are no nuts and bolts to handle.



FOR FULL DETAILS
WRITE FOR BULLETIN 123-1155

Industrial
INDUSTRIAL
FILTER & PUMP MFG. CO.
5904 OGDEN AVENUE • CHICAGO 50, ILLINOIS

For more data circle **210** on Reader Service Card

able from Cosom Industries, Inc., 6012 Wayzata Blvd., Minneapolis 16, Minn.
For more data circle **22** on Reader Service Card

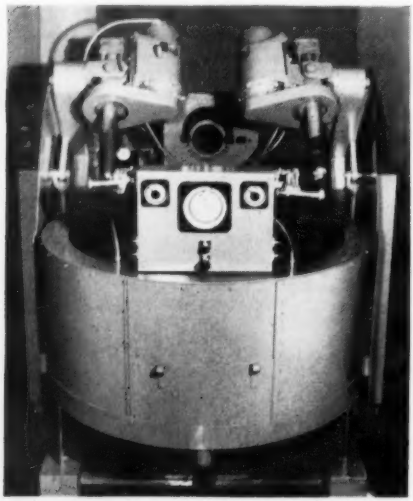
★ ★ ★

Deburring Machine

A mechanical finishing machine designed for use where it is necessary to deburr or finish small lots of parts with critical dimensions is being produced by Mecha-Finish Corp., Sturgis, Mich. Designated No. MM-2-L, this machine deburrs and finishes parts by rotating them in a moving abrasive slurry.

Parts are held on spindles while they are rotated in the abrasive slurry. This machine is equipped with two spindles. Each spindle is automatically powered and timed. Spindles are equipped with air cylinders to lift the parts from the slurry. Manual flushing facilities are provided at each position. Circumferential and radial spindle declination are adjustable to accommodate parts being processed.

The tank for the abrasive or coloring mass is driven by a 10-h.p. motor. The compound dispenser supplies the desired amount of compound automatically. The abrasive tank is 48 inches in diameter by 28 inches deep.
For more data circle **23** on Reader Service Card

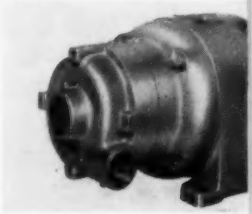


No. MM-2-L Mechamatic Deburring Machine

★ ★ ★

Centrifugal Pump

A "Flex-Seal" centrifugal pump with increased pressure rating has been introduced by Bart Laboratories, Div. of Bart Mfg. Corp., 229 Main St., Belleville, N. J. Several units are available, constructed of special stainless steel for protection against corrosion and product contamination.



Centrifugal Pump

Features of these centrifugal pumps, according to the manufacturer, include double capacity and head pressure ratings operating at 60 to 70 per cent efficiency range; specially designed close coupled junction between pump and motor assemblies for easier seal replacement; and pre-set two-piece seal, requiring no adjustment after it has been installed.
For more data circle **24** on Reader Service Card

★ ★ ★

Small-Sized Flocking Machine

Progressive Equipment Co., 8625-29 Mackinaw at Grand River, Detroit 4, Mich., has introduced a small-sized flocking machine. Called the Peco Flocking Machine, the unit consists of a 110-volt motor, blower, magnetic feed mechanism, built-in screen, discharge hose with controls at outlet,

For more data on advertisement on opposite page, circle **211** on Reader Service Card——→

PIONEERING QUALITY INDUSTRIAL FINISHES SINCE 1928

SERVICE–

"Conduct contributing to the advantage of others."

(Webster's New International Dictionary)

CLINTON Service conforms to this definition–

TRY US AND SEE!

Customer Service is Our No. 1 Concern

THE CLINTON COMPANY

1210 ELSTON AVE. • CHICAGO 22, ILL.

master safety switch, and heavy-duty electric cord and plug. The unit is mounted on casters for portability.

The tilting design of the unit's flock-supply hopper permits easy removal of unused flock.

Flock is discharged by a simple method: a vibratory feeder in the supply hopper and a blower. The vibrator is wired so that it cannot operate before the blower is turned on, thus preventing damage from overloading the blower.

The unit is easy to use and operate. The operator works with an adhesive spray gun in one hand and a flock-discharge hose in the other hand.

For more data circle **25** on Reader Service Card

★ ★ ★

Maintenance Coating

Metal & Thermit Corporation, Rahway, N. J., has introduced a vinyl maintenance coating, Ucilon Coating 1400, that is said to provide the corrosion resistance of vinyl-based coatings without strong odors and the need for meticulous surface preparation.

Ucilon 1400 resists acids, alkalies, water and other causes of early paint failure. It can be used for protection against corrosive fumes on walls, floors, ceilings and the exteriors of equipment in plating plants and other industrial atmospheres.

The coating is self-priming. It can be applied over bare metal, wood, masonry and most previously painted surfaces without special surface preparation, it is stated.

Got a knotty finishing problem? Then consult our experimental finishing department. We'll untangle it! And we'll analyze the best equipment and abrasive material for the job.

Today ... before you invest in any finishing equipment ... send us sample parts, a finished part for use as a guide and your specifications. We'll carry on from there. *We guarantee the same results in your plant as we get in our lab*—so how can you lose? Mail the parts and let's get started.

Write for New 20 Page Catalog

Globe **BARREL FINISHING EQUIPMENT**

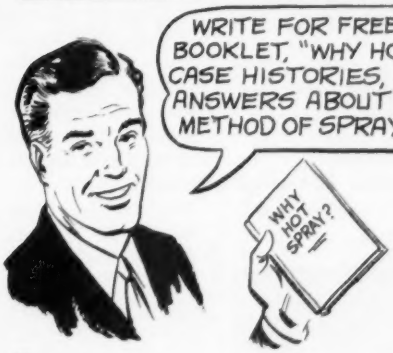
***Division* CASALBI COMPANY**

546 Wayne Street • JACKSON, MICHIGAN

For more data circle **212** on Reader Service Card

SPEE-FLO

HOT SPRAY MAGIC DOES IT AGAIN!


WRITE FOR FREE, FACT-PACKED BOOKLET, "WHY HOT SPRAY?"..... CASE HISTORIES, QUESTIONS AND ANSWERS ABOUT THIS PROVED METHOD OF SPRAY APPLICATION.
WHY HOT SPRAY?

Based on actual operating experience from Spee-Flo files.

SPEE-FLO

HOT SPRAY HEATERS

720 POLK AVE. • HOUSTON, TEXAS

For more data circle 213 on Reader Service Card

Its mild odor and high flash point (105 deg. F.) permit application without disturbing plant routines.

For more data circle **26** on Reader Service Card

★ ★ ★

Metal Cleaner

The John B. Moore Corporation, Nutley, N. J., has introduced a safety cleaner for use in metal degreasing, paint stripping and cleaning of hard and soft metals.

Named Nocaust-NC-200, this material is a dustless, free-flowing powder and is 100 per cent active. Highly alkaline, it contains no free caustic or inert materials.

The Moore Corporation states that it is non-injurious to metals; wets out dirt; emulsifies; prevents redeposition of soil; deflocculates; and maintains a constant pH over a wide range of concentrations.

Nocaust is mixed with water to complete its cleaning functions. The only safety precaution necessary is the wearing of gloves, if the hands are to come in contact with the solution, to prevent the removal of oils from the skin.

For more data circle **27** on Reader Service Card

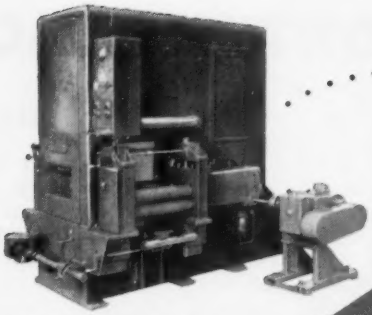
★ ★ ★

Work Gloves

Coated work gloves with seamless palms (to prevent ripping and tearing under strain) have been introduced by Arcadia Manufacturing Co., Birmingham, Mich. Called the "Longhorn," the gloves also have a large palm and oversized thumb crotch.

INVITATION
To Test The Merits Of
Metabond
UNDER ACTUAL PRODUCTION CONDITIONS
We cordially invite you to bring your product parts and pieces into our conveyorized pilot laboratory and personally supervise a complete METABOND rustproofing operation.
You can be the judge. Make any comparison you want with your present rustproofing process. We know you'll be convinced METABOND does the job better.
INTERNATIONAL RUSTPROOF CORPORATION
1575 MERWIN AVENUE • • • • CLEVELAND 13, OHIO
MANUFACTURERS OF RUST PREVENTATIVES & CORROSION SOLVENTS

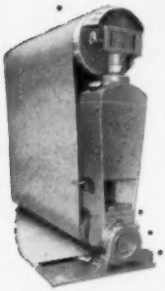
For more data circle **214** on Reader Service Card



ABRASIVE BELT GRINDING & POLISHING MACHINE
(Pinch Roll Type)

For pre-finishing, conditioning and polishing sheets, plates, strips or blanked-out shapes in flat form. Used as single units or in multiple units for progressive line polishing.

for FINISHES that pass inspection the FIRST TIME get a HILL Grinding & Polishing Machine



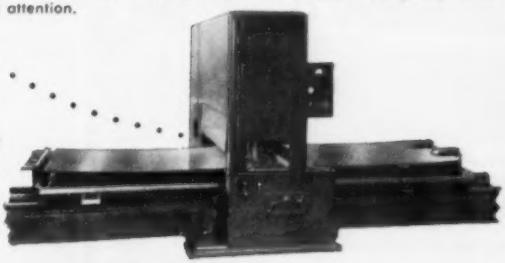
The basic HILL two-roll vertical head with endless abrasive belt. Used in both the Pinch-Roll and the Hydraulic Table types.

● HILL 2-ROLL Vertical Abrasive Belt Grinding and Polishing Machines are made in two general types for producing superior finishes on flat surfaces as required by manufacturers of a wide variety of products such as decorative plastics, auto bumpers, engravers plates, home appliances, etc.

Both types are built in polishing widths up to 60" and larger sizes can be furnished if desired. Your problem will be given our prompt and careful attention.

ABRASIVE BELT POLISHING MACHINE
(Hydraulic Table Type)

For flat polishing of sheets and plates of ferrous and non-ferrous metals. Made in a variety of table widths and lengths with full hydraulic reciprocating table.

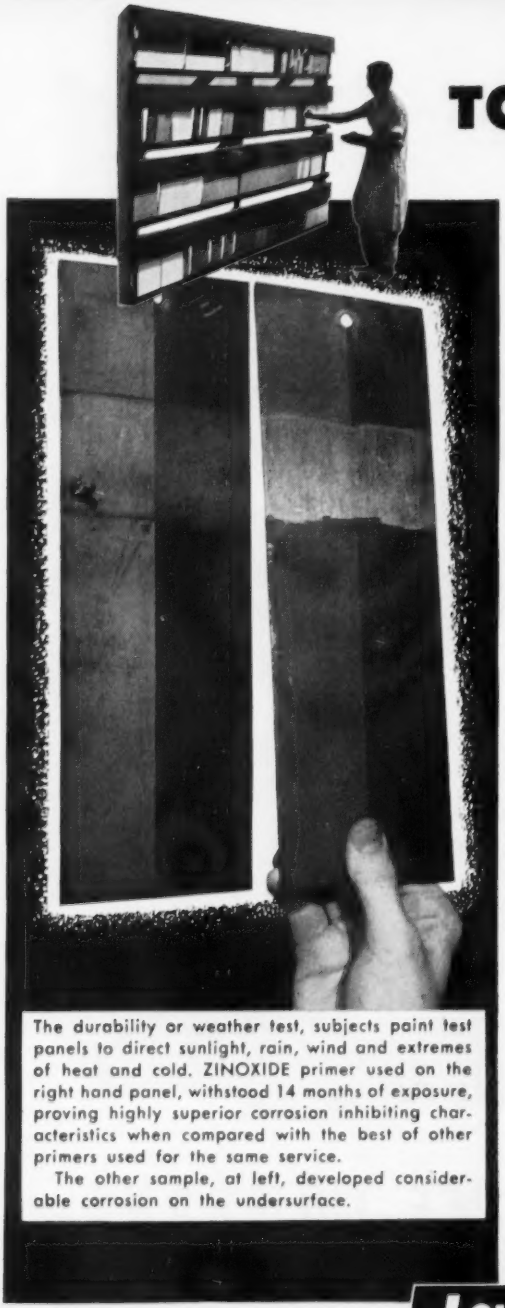


THE HILL ACME COMPANY

1209 WEST 65th STREET • • • CLEVELAND 2, OHIO

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

For more data circle **215** on Reader Service Card



The durability or weather test, subjects paint test panels to direct sunlight, rain, wind and extremes of heat and cold. ZINOXIDE primer used on the right hand panel, withstood 14 months of exposure, proving highly superior corrosion inhibiting characteristics when compared with the best of other primers used for the same service.

The other sample, at left, developed considerable corrosion on the undersurface.

TORTURE RACK for finishes

...helps improve industrial primers

The old saying, "proof of the pudding is in the eating" describes the durability tests employed at Lowe Brothers. Conditions closely duplicating those in actual service are a vital part of testing all new finishes as well as the continual improvement of existing products.

A recent product development program carried out by our Technical Department is a good example.

Extensive tests were made on many types of pigment materials to develop a superior industrial primer. The result—ZINOXIDE—a primer with highly superior corrosion inhibiting properties ideal for the surface protection of forgings, castings and sheet steel products.

For the best industrial finishes, call or write Lowe Brothers, 424 East Third Street, Dayton 2, Ohio

LOWE BROTHERS

INDUSTRIAL FINISHE

also Style-Tested paints for the home

They are coated by the Arcadia Process, which impregnates and seals the liner, a cotton glove. This coating makes the glove resistant to acids, alkalies and oils and gives the fabric added stamina, the manufacturer states. The gloves are fire resistant, are available in various types.

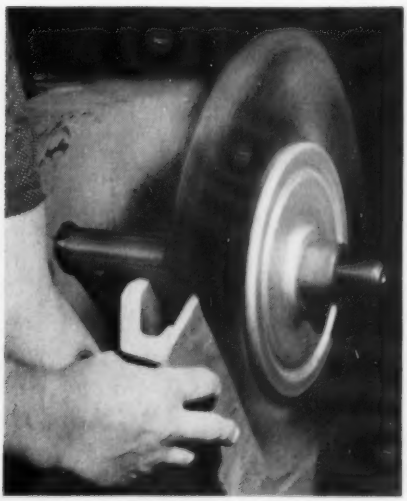
For more data circle **28** on Reader Service Card

★ ★ ★

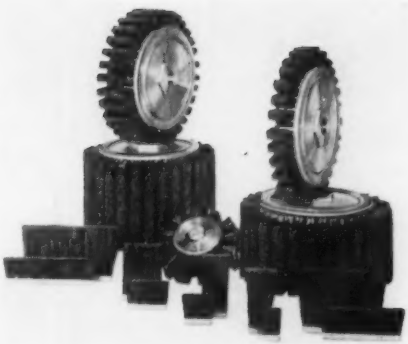
Polishing Heads

Vonnegut Brush-Backed Polishing Heads are now available with short or long bristle brushes, depending on their application, in the 32, 16 and 12-brush models. The 32-brush head is available in a one-inch abrasive width, permitting the operator to get inside intricate patterns. Bulletin No. 102, describing operation and uses of these heads is available from Grinding & Polishing Machinery Corp., 2530 Winthrop Ave., Indianapolis 5, Ind.

For more data circle **29** on Reader Service Card



Vonnegut 32 Brush Head: intricate patterns



Vonnegut Brush-Backed Polishing Heads: now available with short or long bristle brushes.

Cellulose Solution Filter

A 5-micron (0.0002-inch) filter cartridge made of white cellulose bonded with a totally inert resin has been announced by Cuno Engineering Corporation, Meriden, Conn.

The "White Micro-Klean" cartridge is designed for filtration where fluid of extreme clarity is required.

The cartridge, which fits most standard filter housings, can handle highly alkaline fluids without contamination of the fluid or deterioration of the filter cartridge.

The "White Micro-Klean" filter incorporates Cuno's "graded density" construction, which traps larger particles early in the flow path, preventing "plugging" or "plastering up" of the finer filter barriers that follow.

For more data circle **30** on Reader Service Card

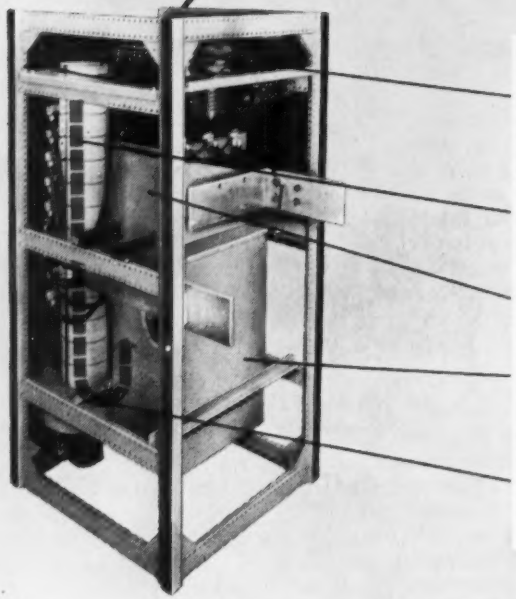
★ ★ ★

Steam Cleaning Apparatus

The speedylectric steam-jet cleaner, a product of Pantex Mfg. Corp., Pawtucket, R. I., uses steam generated by electrical heating and is used to clean with steam containing minimum moisture. Mounted on casters, it can be

To page 122→

←———For more data on advertisement on opposite page, circle **216** on Reader Service Card



Automatic voltage control contains no moving parts or electronic tubes.

This tube contains time-proven General Electric germanium cells, each hermetically sealed in stainless-steel-ceramic enclosure for maximum corrosion resistance.

Transformer

Reactor provides instant, stepless control plus built-in short-circuit protection.

Powerful blowers supply high-velocity cooling air blast (red line) past cells, through reactor and transformer.

General Electric announces a

TO: GENERAL ELECTRIC COMPANY
Section 463-15E, Schenectady 5, N. Y.

Gentlemen:

Please send me bulletin GED-2934, "General Electric Automatic Germanium Plating Rectifier."

NAME _____

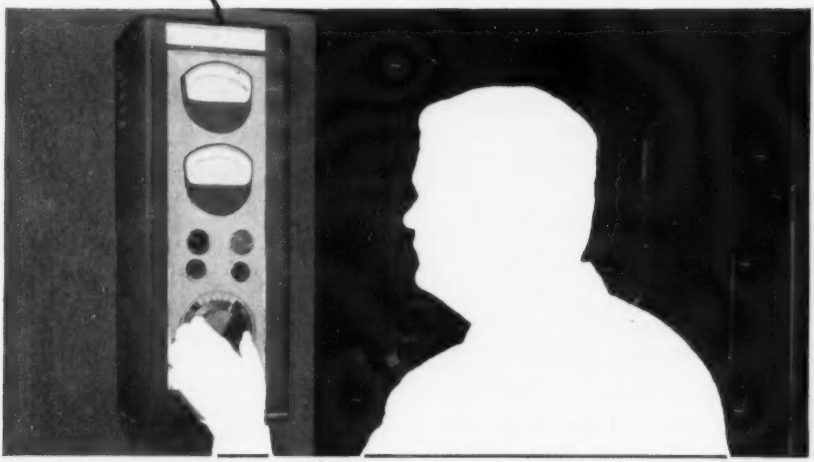
COMPANY _____

ADDRESS _____

CITY _____ ZONE ___ STATE _____

Progress Is Our Most Important Product

GENERAL ELECTRIC



RELEASE THIS MAN FOR MORE PRODUCTIVE WORK . . . no further need for him to continually correct output in order to get high-quality work. Just set it and forget it. This unit corrects faster, more accurately than the most skilled operator. You get uniform power for most profitable plating.

NEW line of low-priced automatic germanium plating rectifiers

Examples: 9-volt/1500-amp, $1890; 12-volt/1000-amp, $1750

COMPLETE with remote, automatic voltage control

Here's the biggest advance in plating rectifier technology since the introduction of germanium: *automatic control at low prices*!

With automatic control, you simply set the output you want on the remote-control panel. This output is maintained automatically, regardless of changes in tank load or variations in a-c input voltage. The result is a uniform product from rack to rack—not too much deposition, which wastes valuable anode material, time, and labor; not too little deposition, resulting in costly rework.

Ratings *are now being built* from 6-volt/750-amp to 250-volt/140,000-amp, air-cooled and water-cooled. Ask your General Electric plating equipment supplier for more information, or send in the coupon at left for bulletin GED-2934. General Electric Company, Schenectady 5, New York.

For more data circle **217** on Reader Service Card

rolled quickly from one job to the next.

Water is heated by three electrodes suspended in a generating chamber, which is enclosed by a pressure tank. Electric current flows from electrode to electrode through the boiler water. The resistance of the water to the passage of current creates heat and generates the steam.

Steam from the generating chamber passes to the cleaner lance through an outlet pipe. Some also passes through a pressure regulator to the regulating chamber. Water levels in the two chambers remain the same as long as the steam pressures are equal. When more steam is generated than used, steam pressure in the generating chamber rises beyond the predetermined regulator setting, and the regulator reduces steam supply to the regulating chamber.

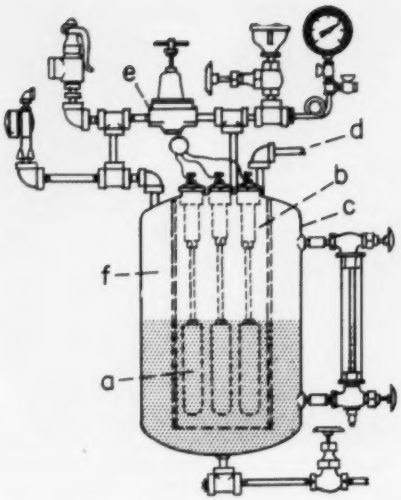


Diagram shows important parts of Speedylectric Steam Generator: electrodes (a) suspended in generating chamber (b); pressure tank (c), outlet pipe (d), and pressure regulator (e) to the regulating chamber (f).

Higher pressure in the generating chamber than in the regulating chamber then causes the water level in the generating chamber to fall and that in the regulating chamber to rise. This continues until the pressures are balanced. Falling water level, which uncovers the electrodes, reduces the current input and therefore steam being generated.

Likewise, using more steam would change water levels, cover the electrodes, and so increase current input and the amount of steam generated. Thus, the Speedylectric regulates itself automatically to balance the electric input with steam load.

For more data circle **31** on Reader Service Card

★ ★ ★

Small Polishing Machine

For small metal parts which require polishing, a polishing machine with an

WOOD TANKS
FOR PLATING AND PICKLING

• Give us your requirements . . . we'll build it from the finest woods, to fit your needs *exactly!*

Send for details.

WOOD TANK DIVISION

Kalamazoo TANK & SILO CO.

1571 Harrison Street, Kalamazoo, Michigan

For more data circle **218** on Reader Service Card

Prevent corrosion & protect metals without painting

- Lithoform® Z for zinc
- Alodine® 1200 for aluminum
- Permadine® for steel

Lithoform Z forms an amorphous chromate coating on zinc and cadmium surfaces which retards the formation of *white rust* or *bloom*. It is effective on most types of electro-deposited zinc, zinc die casting alloys, hot-dipped galvanized surfaces, and cadmium plated products.

Alodine 1200 forms an amorphous chromate film on aluminum which becomes an integral part of the metal and improves the natural corrosion resistance of the metal. In addition to protecting unpainted surfaces, it is a durable and tenacious base for paint.

Permadine—a heavy zinc phosphate coating chemical—forms an oil-adsorptive crystalline coating on steel. When used with such oils as Granoleum,® it provides excellent corrosion resistance.

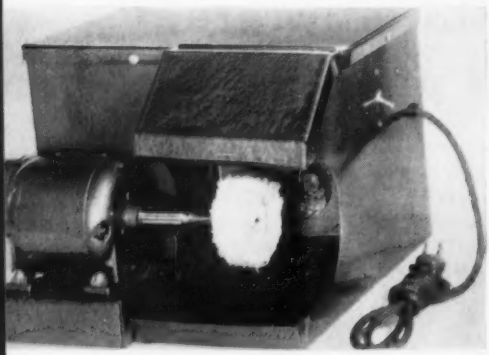
Write for complete information about these ACP corrosion preventives

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

DETROIT, MICHIGAN • ST. JOSEPH, MO. • NILES, CALIFORNIA • WINDSOR, ONTARIO

CHEMICALS ACP PROCESSES

For more data circle 219 on Reader Service Card



Small Polishing Machine has Dust Collector

integral dust-collector has been introduced by Vu-Al Products, 424 S. Broadway, Dept. PF, Los Angeles 13, Calif. The Vu-Al One-Spindle Polisher is an efficient machine for steady use where few changes need be made in buffs and wheels, it is stated.

Compact, the Vu-Al Polisher measures 9 by 12 by 14 inches. It operates on 120 v., a.c., and has a 3,450-r.p.m. motor and a separate dust-collector motor. Suction takes in all polishing dust, keeping the work area dust-free; where precious metals are being polished the dust can be reclaimed. A screen keeps tools and parts dropped during polishing from being drawn into the filter.

For more data circle **32** on Reader Service Card

★ ★ ★

Barrel Finisher

Rampe Mfg. Co., 14915 Woodworth Ave., Cleveland 10, Ohio, has developed a Super Twin Precision Barrel Finisher with 4 cubic feet capacity (2 cubic feet per barrel).

Construction features of the Super Twin include sealed ball bearings

Bond® TACK CLOTH for a SPECK-FREE FINISH EVERY TIME!

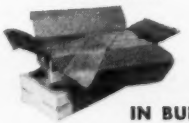
SAVE TIME AND WORK WITH BOND TACK CLOTHS — NOW AVAILABLE IN HANDY ROLLS OR CUT BULK—WHITE OR GOLD —IN THREE DIFFERENT TYPES OF CLOTH

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36″ wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up! The Cut Bulk size is 18″ x 36″ . . . folded to 4½″ x 18″ for ease of handling. ALL BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free, and Wax-Free. Gives a sparkling speck-free Finish every time. Clean and Sanitary. No waste.

IN ROLLS
Cut off any size piece to use as needed

TRY THEM AND COMPARE RESULTS.
Samples Gladly Sent Upon Request.



IN BULK
Cut and folded. Ready to use.

Bond® CHEMICAL PRODUCTS CO. 2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS
"The Tacky Wiper Specialist"

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES—144 TO THE CARTON.
A WARRANTY OF SATISFACTION IN EVERY CARTON.

For more data circle **220** on Reader Service Card

LAVIN ANODES

***ENGINEERED FOR THE ELECTROPLATING INDUSTRY** are produced with or without lugs in* **KEYSTONE . . . RECTANGULAR . . . OVAL . . . BALL** *and* **SPECIAL** *shapes.* Available in COPPER . . CADMIUM . . NICKEL . . ZINC . . LEAD . . TIN for the electrodeposition process.

Lavin specializes in the manufacture of high purity anodes for all electrodeposition products. This minimizes the buildup of undesirable trace elements in the plating solution. These trace impurities can cause subtle, but definite, corrosion problems in the finished product.

Lavin's metallurgical staff is always ready to assist you in finding the solution of any routine or special electroplating problem. Our chemical and research laboratories are available to you at no cost or obligation. Technical information furnished upon request.

R. LAVIN & SONS, INC. — 56 Years — 1900 1956 — SERVING THE ELECTROPLATING INDUSTRY

R. LAVIN & SONS, inc.

3426 S. KEDZIE AVENUE • CHICAGO 23, ILLINOIS

REPRESENTATIVES IN PRINCIPAL CITIES

For more data circle **221** on Reader Service Card

throughout, variable speed drive from 12 to 36 r.p.m., heavy construction throughout, ¾-h.p. 220/440-volt 3-phase motor, water tight push button, and magnetic starter. Hexagonal steel burring barrels are constructed from 10-gauge steel, welded watertight, and with simple gasketed side covers attached with two screws.

The model illustrated has moveable chutes which can be tilted to the rear to drain off liquid and to the front to discharge load. In rear position, chutes act as safety guards. Tote boxes can be furnished in place of the moveable chutes, if desired. Barrels can be lined with vinyl plastic, if specified.

For more data circle **33** on Reader Service Card

★ ★ ★

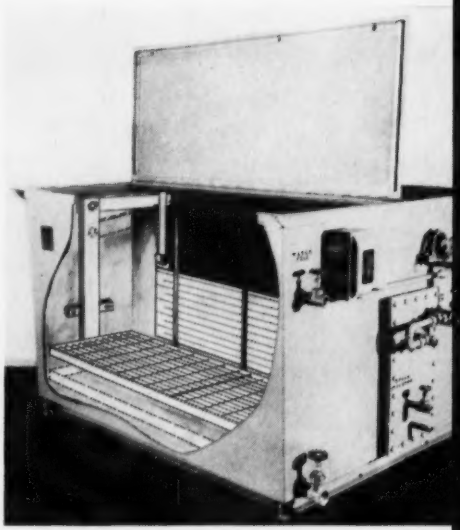
Parts Washer

A parts washer announced by American Machine & Solvents Co., Inc., 11 Centre Place, Yonkers, N. Y., subjects parts to a rapid up and down motion to loosen dirt and other deposits in preparation for finishing. The machine is suitable for cleaning small parts or larger single pieces.

A minimum number of moving parts is used in this machine, so as to reduce wear. All drive parts are kept away from fluid or travel of the work.

Models are available with or without heating equipment to handle loads from 50 to 2,500 pounds.

For more data circle **34** on Reader Service Card



Amasco Parts Washing Machine: cleans metal

★ ★ ★

Packaged Automatic Boiler

A boiler integrally equipped with either oil or gas heating equipment has been announced by Orr & Sembower, Inc., Reading, Pa.

The burner is mounted on the boiler, with the ignition transformer and

PROMAT has the finest in metal preparation, alloy plating, cadmium plating, chromate finishes, copper plating, zinc plating and miscellaneous purifiers and anti-foam agents.

PROMAT

PROMAT will gladly prepare a sample for evaluation, furnish you with technical bulletins and information or assist you in any way possible.

PROMAT DIVISION - POOR & COMPANY

851 SOUTH MARKET STREET PF-1 WAUKEGAN, ILLINOIS

Manufacturing Plants Waukegan, Ill. Philadelphia, Pa. Gardena, Calif.

For additional information and technical assistance write Promat Division — Poor and Company

For more data circle **222** on Reader Service Card

ignition system mounted on the air plenum. The forced-draft blower and the fuel oil pump (on oil-fired models) are driven by a single motor. A flexible hose connects the blower to the burner plenum.

The packaged unit, called the "Power-Pak," incorporates a safety valve and pressure control.

The recently announced unit is available in capacities from 8 to 25 h.p., for pressures up to 15 p.s.i. It is recommended for heating and low-pressure applications in plants and warehouses. Bulletin No. 1233 gives complete information for various models in the line. It is available from Orr & Sembower, Inc., Reading, Pa.

For more data circle **35** on Reader Service Card

★ ★ ★

Germanium Rectifiers

A line of germanium rectifiers recently introduced by Rapid Electric

A Rapid "Golden Line" Germanium Rectifier

SAVE FLOOR-SPACE, TIME, MONEY . . . WITH A PAINT SPRAY BOOTH LIKE THIS

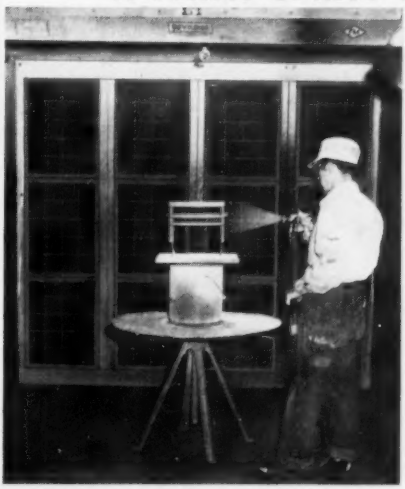


Photo Courtesy Omaha Parlor Frame Co., Omaha, Nebraska

. . . With R P Paint Arrestors

The booth illustrated is just one of the ways to utilize the many advantages of R P Paint Arrestors to increase efficiency . . . and lower costs. These inexpensive pads trap overspray, are easily replaceable with a minimum of down-time and save on maintenance costs and floor-space. R P Paint Arrestors are adaptable to almost every type of operation. Check the R P way to a better, more economical paint spray booth.

RP . . . PRODUCTS OF RESEARCH

Research Products Corporation

Dept. 38, Madison 10, Wisconsin

For more data circle **223** on Reader Service Card

Co., New York, N. Y., includes models rated at 750, 1500, 2500 and 5000 amperes at two to 12 volts, with input voltages of 220 and 440 volts.

Called the Golden Line, these units incorporate a full-control-type tap switch and a redesigned switching arrangement. A balanced full wave circuit provides less than five per cent ripple, the manufacturer states.

Protective devices automatically shut off the unit and protect the germanium cells in case of overload.

The unit's magnetic starter is designed to provide protection against excessive power input. All models are fan cooled. Brochure GL-1, containing complete performance data, is available from the manufacturer, Rapid Electric Co., 2877 Middletown Rd., New York 61, New York.

For more data circle **36** on Reader Service Card

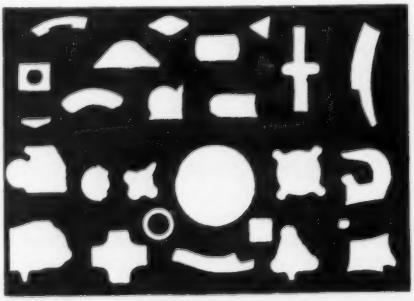
Zinc and Cadmium Brighteners

Allied Research Products, Inc., Baltimore, Maryland, has announced two brighteners: (1) ARP No. 52, a zinc barrel brightener addition agent that provides a uniform lustrous deposit; and (2) ARP No. 41, a brightener that produces improved luster on cadmium.

ARP No. 52 Zinc Plating Brightener is a powder that improves the luster produced in zinc barrels. While the finish may tend toward a slight yellow cast, ½ per cent nitric acid or an Iridite dip produces an attractive clear-bright, the manufacturer states.

ARP No. 52 is consumed slowly. It is stable. In field testing over a two-year period, ARP No. 52 shows promise especially for high-volume installations.

ARP No. 41 Cadmium Plate Brightener is a liquid. It provides improved luster, operates over a wider range of



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

Write for free samples and Bulletin 160-C.

W. H. Brady Co.
746 W. Glendale Ave., Milwaukee 9, Wis.

For more data circle **224** on Reader Service Card

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle **225** on Reader Service Card

current densities, is compatible in plating solutions formerly using addition agents containing nickel salts, and rinses almost free of water breaks.

Full information on these chemicals may be obtained by writing Allied Research Products, Inc., 4004-06 East Monument St., Baltimore 5, Md.

For more data circle **37** on Reader Service Card

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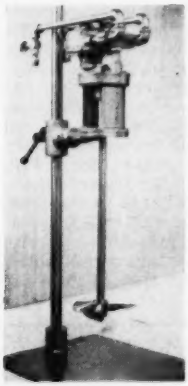
Bench-Type Agitator



Eclipse heavy duty bench type agitator

A heavy-duty bench-type agitator for mixing of viscous materials in small batches has been announced by Eclipse Air Brush Co., 390 Park Ave., Newark, N. J. Identified as the DL Pneumix, the agitator is recommended for laboratory mixing of thick materials. It cannot overheat or burn out even if stalled, it is stated. The DL uses an explosion-proof ½-h.p. air motor with 8:1 gear reduction. Speed of rotation is controlled by a hand throttle.

The standard shaft used on this agitator is stainless steel of ⅝-inch diameter, 15 inches long, with a 6-inch diameter boat-type propeller threaded to the end.

For more data circle **38** on Reader Service Card

★ ★ ★

Paint Remover

The RPO Corporation, Hazel Park, Michigan, has recently announced a non-flammable paint remover compounded to remove epoxy-based paints.

It is called LPO (Lifts Paint Off). LPO will remove epoxy-based paints without damage to the underlying surfaces. The manufacturer states that this paint remover does not require heat. Two forms of the material are described: one is a standard heavy-bodied form which is said to cling to a vertical surface; the other is an unthickened form which is recommended for use in tanks.

LPO removes epoxy-based paints without heat

The producer of LPO recommends spraying or brushing this product on the surface from which paint, varnish, enamel, or lacquer is to be removed. When the paint has completely blistered as the result of the LPO application, it may be flushed off with a high velocity stream of water (such as a garden hose) or lifted off with a putty knife or wiped off with a soft cloth. According to RPO chemical engineers, the surface from which paint has been removed by LPO (Lifts Paint Off) need only be washed with water and dried before repainting.

For descriptive literature on LPO Paint Remover, write to RPO Chemical Corp., 2727 East Nine Mile Rd., Hazel Park, Michigan.

For more data circle **39** on Reader Service Card

★ ★ ★

For further information on any product mentioned in this issue use READER SERVICE CARDS inside front cover.

NEW BOOKS

Symposium on Atmospheric Corrosion of Non-Ferrous Metals. (ASTM Special Technical Publication No. 175). 164 pages. Price, $2.75. Order copies from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

This symposium covers a comprehensive test program for the measurement of atmospheric corrosion properties of non-ferrous metals and alloys. The exposure tests were started twenty-seven years ago by Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys.

The materials utilized included 24 wrought alloys of zinc, nickel, copper, lead, tin, and aluminum. These were exposed at nine significant localities across the country.

★ ★ ★

The Analysis of Electroplating Solutions for Major Constituents. A.E.S. Research Report Serial No. 29. Project director, Earl J. Serfass; associate, Mary H. Perry. Published by the American Electroplaters' Society, 445 Broad St., Newark 2, N. J. Price, $.90.

This is a report of A.E.S. Research Project No. 6, conducted at Lehigh University, Bethlehem, Pa. This report contains four sections, the first of which is devoted to a description of an investigation carried out to develop an accurate method for the determination of a very small amount of chromate ion in zinc plating baths which also may contain copper, cobalt, ferric iron and lead as impurities.

The second section is devoted to a similar investigation carried out to develop a method of determining very small amounts of lead in zinc plating baths, which may be contaminated with appreciable quantities of copper, chromium, cobalt, ferric and nickel ions.

The third section is a report on an improved method for determining boric acid in a nickel plating bath.

The fourth and last section outlines the factors which are considered important in the Project 2 study of macro-analytical methods, and tabulates briefly the conclusions which were reached in the Projects' testing of the macro methods of analysis now available to the plater. Two new methods of analysis are outlined briefly: the determination of boric acid, and the determination of alkali hydroxide in cyanide plating baths.

For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, Calif.*
Standard of the Finishing Industry Since 1934
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Quality Control through

"pH PAPERS"

Accurate pH Values in a few seconds

Indicator AND control - colors on SAME strip. Control-colors in steps of 0.2 pH and 0.3 pH. Sensitivity 0.05 pH.

SAVE TIME AND MONEY

ENTIRE pH RANGE FROM 0.4-14.0 pH COVERED BY A SERIES OF SHORTER RANGES.

PAUL FRANK

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For more data circle **227** on Reader Service Card

"Recommended Processing Methods for Porcelain Enamel on Aluminum Alloys" and **"Recommended Test Methods for Evaluation and Control of Quality of Porcelain Enamel on Aluminum."** Prepared by Processing Methods and Quality Development Sub-committees of the Porcelain Enamel Institute, Aluminum Division. Available from the Porcelain Enamel Institute, 1145 Nineteenth St., N. W., Washington 6, D. C. Each 25 cents.

The Processing Methods bulletin includes sections on design and fabrication, surface preparation, application and preparation of enamel, firing, post treatment and general considerations.

The Test Method bulletin discusses such tests as acid resistance, abrasion resistance, chemical resistance, torsion resistance and weathering. Also discussed are tests for color and gloss measurements, retention of adherence, thickness, and staining and impact.

★ ★ ★

1954 Supplement to the Bibliography and Abstracts on Electrical Contacts. In 1952 the Bibliography and Abstracts on Electrical Contacts (ASTM STP 56-G) was reissued to include the original printing of January 1944 and the intervening supplements. STP No. 56-H contained the 1952 and 1953 supplements. The current publication (No. 56-I) includes the references collected between January 1954 and January 1955. 48 pages. Price, $1.00. Copies available from A. S. T. M. Headquarters, 1916 Race St., Philadelphia 3, Pa.

In both the 1952 book and the two subsequent publications there is a subject and author index. All of these publications include references on a wide variety of subjects, including microphysics of the electric arc, metallurgy of the contact materials, mechanics of the operating mechanism, physical and chemical properties of all the materials, and the ambient conditions. It is of interest to note that the current supplement has a particularly high increase in the number of publications concerning the relation between circuit and circuit parameters and contact and switching operations.

★ ★ ★

COLD CLEANER CHARTS. Complete performance data on Manpro **Cold Cleaners** is included in charts available from **Manufacturers Processing Co.**, 1354 Hilton Rd., Detroit 20, Mich. This line of cold cleaners features solutions designed for degreasing small parts as well as cleaning large assemblies and electric motors. Charts have such information as specific gravity, flash point, boiling point, viscosity, miscibility with water, and other data on the various types of cleaners within this line.

★ ★ ★

A.S.T.M. Standards on Light Metals and Alloys, Cast and Wrought. 276 pages. Price, $3.50. This third edition of "A.S.T.M. Standards on Light Metals and Alloys, Cast and Wrought" sponsored by Committee B-7 on Light Metals and Alloys includes specifications and methods of test which come under the jurisdiction of Committee B-7, those for light metal alloy die castings prepared by Committee B-6 on Die Castings, and those for aluminum wire and cable for electrical purposes sponsored by Committee B-1 on Wires for Electrical Conductors. Several methods under the jurisdiction of Committee E-1 on Methods of Testing and Committee E-3 on Chemical Analysis of Metals as well as specifications for aluminum and aluminum alloy arc-welding electrodes and for brazing filler metal under the jurisdiction of the A.W.S.-A.S.T.M. Joint Committee on Filler Metal have been included to round out the compilation.

The standards include ingots, castings, bars, rods, wire, forgings, pipe and tube, sheet and plate, wrought products for electrical purposes, filler metal, electroplating, and general methods of test. There is also included the A.S.T.M. codification system for light metals and alloys.

Copies of this compilation can be obtained from A.S.T.M. Headquarters, 1916 Race St., Philadelphia 3, Pa., at $3.50 per copy.

Book of Standards. The American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., has completed and published its largest triennial Book of A.S.T.M. Standards. The 1955 edition has over 11,000 pages and includes more than 2,150 standard specifications, tests, and definitions for materials. This important technical book is an excellent example of the valuable results which come from the intensive work of the Society's many members and active technical committees. The book is issued in seven parts, each pertaining to a particular area or group of areas of materials. The parts are priced as follows:

Part 1—Ferrous Metals. Price, $13.50. Part 2 — Non-Ferrous Metals. Price, $11.00. Part 3—Cement, Concrete, Ceramics, Thermal Insulation, Road Materials, Waterproofing and Soils. Price, $13.50. Part 4—Paint, Naval Stores, Wood Cellulose, Wax Polishes, Sandwich Building Constructions. Price, $11.00. Part 5—Fuels, Petroleum, Aromatic Hydrocarbons, and Engine Antifreezes. Price, $11.00. Part 6 — Electrical Insulation, Electronic Materials, Plastics and Rubber. Price, $13.00. Part 7—Textiles, Soap, Water, Paper, Adhesives, and Shipping Containers. Price, $11.00. Complete set—Seven Parts, $84.00.

"Research on Treated Magnesium Surfaces." Research toward development of an accelerated performance test for treated magnesium alloys is described in an Air Force report, PB 121140, by S. E. Rohowetz, Bjorksten Research Laboratories, Inc., for Wright Air Development Center. Price, $4.75. Available from OTS, U. S. Department of Commerce, Washington 25, D. C.

Test methods for evaluating the quality of chemical and electro-chemical surface treatments with respect to corrosion resistance afforded by the treatments to the base metal, and the adherence between paint-type coatings and the base metal afforded by surface treatments, are needed to determine the acceptability of magnesium alloys submitted to the military services.

Corrosion resistance tests included pH increase in 1.0 N KCl, open circuit potential comparisons, short circuit current comparisons, and hydrogen evolution rates in 1.0 N KCl (gasometric method). Tests of adhesion of zinc chromate primer to the treated surfaces included adhesion in shear (wrought alloy specimens), adhesion in tension (cast alloy specimens), and impact, ultrasonic vibratory, and pressure-sensitive type tests (qualitative).

Randolph

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BETTER FINISHES for your products

LACQUERS • ENAMELS
DOPES • THINNERS
CLEAR METAL FINISHES
COLORED LACQUERS
CLEAR S.G. FOR METAL
TEXTURE ENAMELS
SPECIALIZED PRODUCTION FINISHES
AIRCRAFT FINISHES

Depend on us for Prompt Delivery

RANDOLPH PRODUCTS CO.
CARLSTADT, N. J.

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Don't Throw Away *Buffing Compound* NUBBINS!

We remelt Nubbins — ship you whole bars.

Did you ever figure how many pounds are lost because your Nubbins are discarded?

Worthless Nubbins remelted and recast into uniform bars.

Work Done in Separate Plant.

Write, wire or phone Vinewood 3-5970

RECAST & REMELT DIVISION

McAleer MANUFACTURING CORP.
101 S. WATERMAN DETROIT 17, MICH.

For more data circle **229** on Reader Service Card

COMPRESSOR CATALOG. A 16-page catalog describes complete line of automotive, industrial and portable air compressors.

The booklet sets forth the basic considerations recommended in the proper selection of an air compressor. A "selector chart" indicates the most efficient size compressor according to use and compressor pressures per square inch needed for various jobs.

The 14 basic features of Binks compressors are listed along with complete specifications tables covering single and two-stage tank-mounted units, vertical-mounted units, and the complete portable line.

The last few pages of the booklet are devoted to illustrations and descriptions of Binks compressor accessories. For complete information and a copy of the catalog, write to **Binks Manufacturing Company**, 3118-40 W. Carroll Ave., Chicago 12, Ill.

★ ★ ★

A.S.T.M. 1955 Proceedings. This edition of the A.S.T.M. Proceedings records the technical accomplishments of the American Society for Testing Materials for the year 1955. It includes many technical reports and papers together with discussion which has been offered to the Society during the year and accepted for publication. 1,264 pages. Price, $12.00. Copies available from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Leading the volume is the Summary of the Proceedings of the 58th Annual Meeting, held in June 1955, listing by title and author the program for each of 32 sessions.

Reports of the technical committees, of which there are 70, and their appendices provide a wealth of useful technical information as do the 34 technical papers and discussions on a wide variety of subjects pertaining to research and testing of materials.

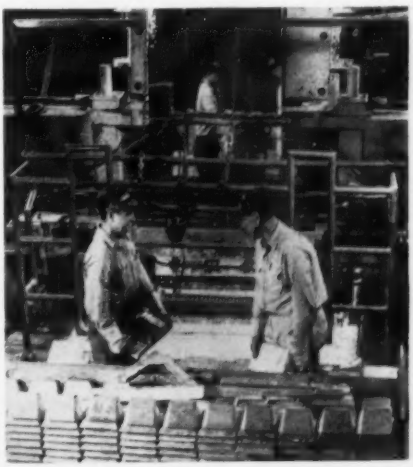
In addition to the papers and reports embodied in the Proceedings, there are listed in the table of contents all symposiums published separately as Special Technical Publications and all papers published in the A.S.T.M. Bulletin.

Zinc Controls Corrosion. A new 16 mm. sound and color motion picture, "Zinc Controls Corrosion" has been produced by **The American Zinc Institute, Inc.**, national trade association for the zinc industry. Available for showing before agricultural, industrial, technical, and educational groups, the film tells how zinc controls corrosion to lengthen life, and to minimize maintenance and replacement costs.

The film has a running time of about 35 minutes. It presents a colorful demonstration of the general mechanism of corrosion as well as how zinc controls it. It gives pictorial evidence that a sound corrosion-prevention program based on the use of zinc will lengthen the life of steel products and reduce maintenance costs.

"Zinc Controls Corrosion" describes new continuous galvanizing lines, the hot dip galvanizing of large structural parts, and such effective means of corrosion prevention with zinc as cathodic protection, metalizing, sherardizing, and painting.

Bookings are now being accepted at The American Zinc Institute, Inc., 60 East 42nd Street, New York 17, New York. The film is available for showing at no charge.



Producing galvanized strip from a continuous hot dip galvanizing line. This is one of the scenes from the new American Zinc Institute movie entitled "Zinc Controls Corrosion."

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . societies

NEW PLANTS

Apex Alkali Products Company has acquired an additional building adjacent to the company's existing building. The added structure will increase floor space by 40,000 square feet and will be used for manufacturing and storage of the company's complete line of cleaning compounds.

★ ★ ★

A new combined office, warehouse and manufacturing building has been completed for **Metal & Thermit-United Chromium of Canada, Limited.**

The new structure is located on a four-acre tract on Factory Street in the Highbury area of Etobicoke Township in northwestern Toronto. A one and a half-story structure, it is 80 by 140 feet in size.

Sixteen hundred square feet will be devoted to office space. The remaining area will be used for production equipment, warehouse space and boiler room.

Products to be manufactured at the Toronto plant include chromium, copper and nickel plating materials, liquid dips, organic protective coatings and Thermit welding compounds. The warehouse will permit carrying ample stocks of the company's other products.

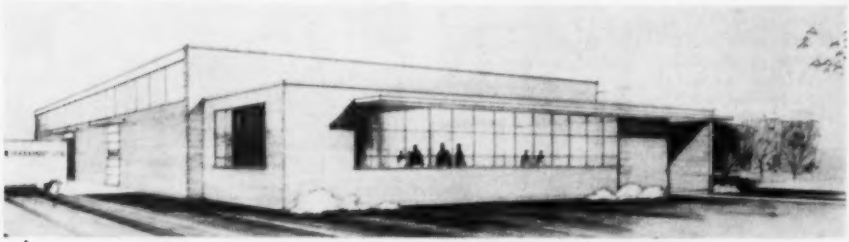
★ ★ ★

Norton Company has dedicated its recently completed Huntsville, Alabama, electric furnace plant at ceremonies commencing a two-day Open House Program.

The new plant will manufacture a variety of electric furnace materials, including boron carbide, fused zirconia, fused magnesium oxide, and fused alumina.

At a later date, facilities for making aluminum oxide and silicon carbide may be added. These materials are used in making abrasive products and high temperature refractory materials.

Edward D. Porter is resident manager of the Huntsville plant, which, at



Architect's drawing of new building for Metal & Thermit-United Chromium of Canada, Ltd.

the present time, employs about 60 people.

Norton Company has been authorized by the Atomic Energy Commission to exchange information and services under the United States bi-lateral agreement with Canada for cooperation concerning civil uses of atomic energy.

The announcement was made by Milton P. Higgins, Norton president, at dedication ceremonies for the company's electric furnace plant in Huntsville, Alabama.

Norton Company's authorization refers to the services with respect to technology of fabricating control rods, shielding materials, ceramic fuel elements, and crucibles insofar as they relate to atomic reactors.

★ ★ ★

Installation of new production facilities has been announced by William J. Cosmos, president of **Chicago Rubber Company.**

The firm has moved into a plant with newly installed modern equipment at 651 Market St., Waukegan, Ill. Formerly the company's plant was at 2620 Clybourn Ave., Chicago.

Mr. Cosmos said the company, which makes industrial and printers' rolls as well as contact wheels and rolls for use with abrasive belts, is establishing production line operations for several items with high demand. The firm will also continue its custom-shop operations, Mr. Cosmos said.

★ ★ ★

The DeVilbiss Company has announced that a new and larger Los Angeles direct factory branch has been completed.

DeVilbiss, with headquarters in Toledo, Ohio, manufactures spray guns, booths, air compressors, rubber hose and other components for complete finishing systems.

The new building is at E. Slausen and S. Garfield Avenues. It is five times the size of the old branch, and marks a major expansion by DeVilbiss in the Los Angeles area. The company established its first branch office in this area more than 20 years ago to serve southern California and Arizona.

The customer research department will be used to conduct tests to solve finishing and equipment problems. Scheduled for installation for demonstration and customer test purposes are a complete line of automatic spray machines built by DeVilbiss as well as exhaust and water wash spray booths. The DeVilbiss paint heaters and catalytic equipment also are to be included in the research laboratory.

Heading the Los Angeles branch is George Fulton, manager, working under the direction of J. W. Dayton, west coast district sales manager. D. L. Bohon is the DeVilbiss west coast general manager.

★ ★ ★

Metal & Thermit Corporation, New York, N. Y., has purchased a 163-acre site near Carrollton, Kentucky, and will soon begin construction of a new chemical processing plant.

The initial development of the property will cover ten acres of the tract, and will include an office building, a warehouse building and a steam plant as well as the production buildings and several minor structures.

The plant will produce organotin chemicals for the plastics, textile, pharmaceutical and other industries. The products will include a complete line of color stabilizers for polyvinyl chloride resins and other plastics formulations.

Drawing of new Metal & Thermit Plant, which is soon to be built in Carrollton, Ky.

COMPANIES

Sizeable savings over previous deburring and finishing costs have won an **Almco Supersheen Award** for **Canadian Pratt and Whitney Aircraft Company, Ltd.** of Montreal, it has been announced.

The award, a 50-dollar check and certificate, was made by Almco of Albert Lea, Minnesota, manufacturer of barrel finishing equipment and compounds. Basis of the award was the savings made on spark plug bushings used in the Canadian Pratt and Whitney aircraft engine.

Details of the report also cite product quality gains. Job reports submitted after converting to controlled processing with barrel finishing equipment showed a virtual elimination of rejects.

Equipment used by Canadian Pratt and Whitney in winning the Almco award included two Almco DB-200 units with capacity for deburring and finishing 1,000 spark plug bushings in 45 minutes.

Any company using Almco equipment is eligible to enter the Almco Supersheen award competition. De-

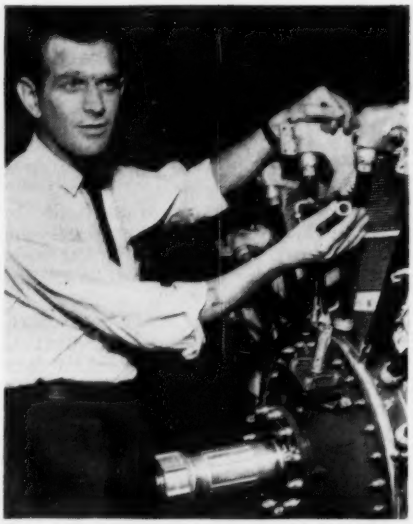


Fig. 1—Winner of Almco Award, Maurice Harrison, supervisor of Process Planning at Canadian Pratt and Whitney Aircraft Co., Ltd., of Montreal, shows threaded spark plug bushing which was basis of Almco award. Deburring and finishing machine and process used on the plug was designed and manufactured by Almco Supersheen Division of Queen Stove Works, Inc., Albert Lea, Minn.

PAINT MIXER

MIRACLE PAINT REJUVENATOR

All paint restored to original consistency without opening the can.
2 minutes per gallon.

MIXERS AVAILABLE
¼ PT. to 55 GALS.

MIRACLE PAINT REJUVENATOR COMPANY
127 E. 9th St., St. Paul 1, Minn.

5 GAL. MODEL

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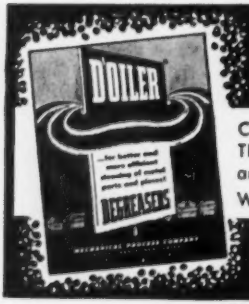

Write for this folder on
D'OILER DEGREASERS

Contains details on all types of degreasers: Laboratory, Two-Dip, Three-Dip, Vapor Spray, Barrel Type, Automatic, Semi-Automatic and Specials.

When the job needs a degreaser . . . there's a D'OILER for the job.

MECHANICAL PROCESS CO., Inc. 392 VALLEY STREET SOUTH ORANGE, N. J.

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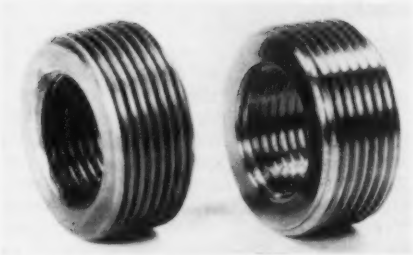


Fig. 2—Before and after view of spark plug bushings processed with Almco equipment. The bushing at the right of photo has just been deburred and polished in an Almco Model DB-200 barrel finishing machine.

tails can be obtained by writing to the Almco Supersheen Division of Queen Stove Works, Inc., Albert Lea, Minn.

★ ★ ★

Sel-Rex Precious Metals, Inc., has expanded its product line to include electroplating processes and chemicals, other than precious metals, as well as electroplating equipment of their own design and manufacture.

The corporate name has been changed to **Sel-Rex Corporation,** with executive offices at 155 Manchester Place, Newark 4, New Jersey, in order to avoid the misleading impression that the firm deals exclusively in precious metals.

Among the equipment included in the expanded line is the Sel-Rex "Jet Plater," a complete electroplating unit in a small, portable cabinet. The chemical line includes Sel-Rex Copper Purifier, which removes harmful carbonates, sulfates, chromates and adds copper metal at the same time to copper plating baths; Sel-Rex Cadmium Brightener, an addition agent for barrel and still cadmium plating; Sel-Rex Zinc Barrel Brightener, which permits brilliant zinc deposits directly from the bath, and Lectro-Nic, compressively stressed nickel plating process.

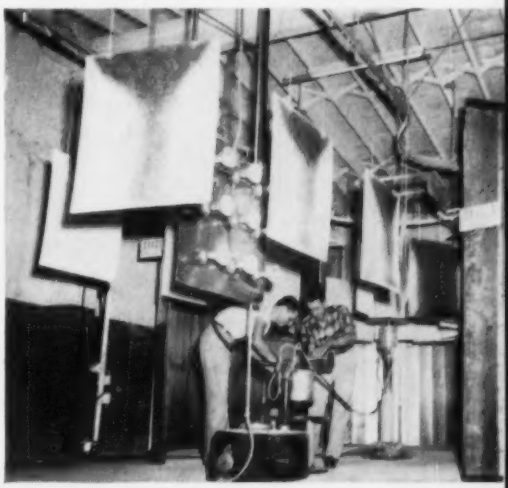
Officers of the new Sel-Rex Corporation are: M. M. Messing, president; E. C. Rinker, vice president-general manager; L. R. Collart, vice president-treasurer; and F. W. Brearley, assistant secretary.

★ ★ ★

Installation of a complete disc-atomizing-type electrostatic spraying system for use in the basic development of porcelain enamels has been announced by **Pemco Corporation,** Baltimore, Md.

The equipment gives indications of eliminating some of the testing and experimentation heretofore necessary in plants of customers who use electrostatic spraying. Porcelain enamels applied by this system do not behave the same as when applied by conventional hand spraying or automatic spraying. Experimentation and evaluation may now be done at the Pemco Research Division Laboratories.

Advantages reported for electrostatic spraying over hand and conventional automatic spraying include reduced loss of spray materials, more even coverage, reduction of coating thickness and less spoilage.



Pemco Corporation's electrostatic spray installation: for testing and evaluating porcelain enamel frits to be applied electrostatically.

In Pemco's installation, panels are carried on a conveyor traveling a merry-go-round loop during spraying. Infrared lights installed on one section dry the panels before firing. Atomized slip is charged electrically and is sprayed evenly on panels grounded with opposite polarity.

★ ★ ★

A reorganization of the advertising functions of **The Carborundum Company** has been announced by the company's manager of advertising, Burchard M. Day. Net effect of the reorganization has been the setting up of semi-autonomous advertising departments in each of Carborundum's major operating divisions and subsidiaries in the United States and Canada.

At a recent three-day conference in Niagara Falls, New York, Carborundum's new advertising organization and policies were discussed with the newly appointed product advertising managers. The agenda for the meetings was designed to illustrate the future role of the company's central Advertising Branch in servicing division advertising personnel.

The three-day program featured informal presentations by J. W. Bralts, manager of Marketing Research; E. D. Lackey, manager of Public Relations; H. J. Prosser, manager of Sales Training; and E. J. Loftus, manager of Financial Programming and Analysis. Each outlined his branch's services that are available to the company's divisions.

A highlight of the program was an informal meeting with the president of the company, General Clinton F. Robinson, who discussed the essential role of advertising in the accomplishment of Carborundum's immediate and long term objectives. The meetings were concluded by a discussion led by Carborundum's director of marketing, F. T. Keeler.

★ ★ ★

W. P. Fuller & Co. has announced establishment of four major sales districts in eleven western states. Each district will have its own administrative organization.

General managers appointed to the four districts assumed their new duties December 1.

The Southern District, covering southern California and all of Arizona, will be headed by **H. B. Wilson,** formerly manager in Los Angeles.

S. H. Kline, presently San Francisco branch manager, will manage the

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

Write (Dep't. P) on your letterhead for catalog and price list.

DIXON & RIPPEL, INC. Box 116 Saugerties, N. Y.
ESTABLISHED 1856

For more data circle **232** on Reader Service Card

SOLVENTS and THINNERS RECOVERED

from wash thinners, spoiled lacquers, degreasing machine sludge, etc.

Solvents recovered by the Lofgren Process. Each customer's shipment, whether one drum or a carload, receives proper and separate treatment. *Write to:*

Solvents Recovery Service, Inc.
1025 Broad St. **Newark 2, New Jersey**

Hammond Solvents Recovery Service
241 Brunswick Rd. **Hammond, Ind.**

For more data circle **233** on Reader Service Card

Central District, comprised of central and northern California.

Managing the Intermountain District (Nevada, Utah, Idaho and Montana) will be **Paul Loynd,** with headquarters in Salt Lake City.

The new Northwest District (covering Oregon, Washington and Alaska) will be managed by **C. E. Freeman,** formerly Puget Sound branch manager.

Additional promotions include the following: **P. A. Sherrard** will take charge of the Los Angeles branch; **Paul C. Keenan** will manage the San Diego branch; **M. H. Poppett** to manager of the San Francisco branch; **W. Schweitzer** will manage the newly created Seattle branch; **L. R. Brown** will now manage the Boise branch.

★ ★ ★

The Pangborn Corporation, Hagerstown, Md., manufacturer of blast cleaning and dust control equipment, recently welcomed eight new members to the firm's Quarter-Century Club at the sixth annual reunion of the club. The new members were presented with engraved gold wrist watches by Thomas W. Pangborn, president, in recognition of their contribution to the growth of the corporation.

The new members are M. E. Fahrney, A. W. Shupp, J. R. Wagner, C. H. McKinsey, L. H. Baker, A. F. Rodgers, C. S. Bowers and A. Lesley Gardner.

★ ★ ★

A new service for the buffing industry has been added to **McAleer Manufacturing Corporation** facilities. Buffing compound nubbins are being reclaimed and recast by a new division of McAleer Manufacturing Corporation, Detroit, Michigan, according to an announcement made by Edward Van Zandt, sales manager.

Nubbins are shipped to a separate plant especially set up to remelt and recast discarded nubbins and bar ends. The Remelt & Recast Division renews worthless compound bars.

Thus, Mr. Van Zandt indicated, the usual five per cent to eight per cent compound bar loss can be eliminated.

The Pangborn Quarter-Century Club welcomes eight new members at sixth annual banquet. From left to right, bottom row, the eight new members are A. Lesley Gardner, C. S. Bowers, L. H. Baker, A. F. Rodgers, C. H. McKinsey, J. R. Wagner, A. W. Shupp and Max E. Fahrney. At the head of the table stand P. J. Potter, Victor F. Stine, Thomas W. Pangborn, Lloyd L. Stouffer, Mrs. Helen R. Fisher (directors of the corporation) and the Rev. DeWitt L. Miller. (Photo courtesy the Pangborn Corp., Hagerstown, Md.)

Stockholders of **Hooker Electrochemical Co.** and **Oldbury Electrochemical Co.** have approved consolidation of Oldbury into Hooker. For the present, Oldbury will be operated as a division of Hooker.

Hooker produces five basic chemicals: chlorine, caustic soda, caustic potash, phenol and hydrogen, sold to industrial users and used by Hooker in its manufacture of more than 100 other chemicals. The company also produces a broad line of phenolic and polyester resins, plastic molding compounds, and trichlorethylene degreasing solvent.

Oldbury is an important producer of phosphorus, phosphorus compounds, chlorates, perchlorates, oxalic acid and perchloric acid.

★ ★ ★

Speed-D-Burr Corporation, Glendale, California, manufacturer of barrel finishing equipment and supplies has announced an agreement with Minnesota Mining & Manufacturing Co., St. Paul, Minn., makers of "Honite" brand barrel finishing supplies, to distribute the complete line of equipment manufactured by Speed-D-Burr through 3M distributors.

Distributors of 3M equipment will supplement the present Speed-D-Burr distributor organization.

★ ★ ★

H. N. Hartwell & Son, Inc., Boston, Massachusetts, has announced that the company recently has been awarded a contract for over 82 miles of plastic pipe by the Bureau of Ships. This will be Boltaron 7200 high-impact polyvinyl chloride pipe and will be used on ships in the washdown systems which wash away radioactive contamination when the ships are exposed to nuclear explosions. The piping was chosen for its resistance to sea water. It weighs one-fourth as much as metal piping.

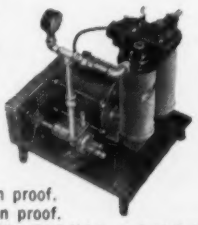
★ ★ ★

The Bart-Messing Corporation, Newark, New Jersey and the **Pennsylvania Transformer Company,** Canonsburg, Pennsylvania have formulated an agreement to work jointly on the design and installation of Sel-Rex Germanium, Silicon, and Selenium Rectifiers for large-scale electrochemical and electrometallurgical applications, according to an announcement released by both companies.

★ ★ ★

The **Cook Paint & Varnish Company,** Kansas City, Mo., has announced election of **Lathrop G. Backstrom,** president, to the office of chairman of the board. He succeeds the late R. B. Caldwell. Mr. Backstrom

NEW Sethco FILTER PUMP
double cartridge self-priming
1-3 Gal./Min.



Model **CCGIE-120**—rated 1-3 gals. per min. for continuous filtration of solvents, lacquers, paints and all types of Product Finishing solutions.
FILTER ASSEMBLY: Double cartridge equipped with pressure gauge.
PUMP: Self-priming gear with relief valve set at 35 p.s.i.
MOTOR: ¼ H.P., explosion proof.
SWITCH: Manual, explosion proof.
PANEL: Bakelite, 14" x 16" x ½" thick; swivel ball bearing, rubber tire casters.
HOSE: two 10' lengths, solvent resistant, inlet strainer.
50' Electric Cable.
DIMENSIONS: 14" x 16" x 6" high, Wt. 65 lbs.

Sethco Mfg. Co.
70-72 Willoughby St., Bklyn. 1, N. Y. • ULster 5-8940

For more data circle **234** on Reader Service Card

MORSE VERTICAL DRUM TRUCK
ROCK-A-DRUM

Picks up 55 gal. drums, rolls them over for side draining. Becomes a rugged stand on 3" wheels.
MORSE MFG. CO., INC. 762 W. Manlius St. East Syracuse, N.Y.

For more data circle **235** on Reader Service Card

will continue to serve as the president.

W. H. Hoover, vice-president in charge of industrial sales, assumes added duties as executive vice-president.

M. D. Blackwell, secretary, has been elected to the board.

The Cook company produces automotive, industrial and architectural finishes.

NEW POSITIONS

John Watson, former manager of **Despatch Oven Company's** Chicago office, has been appointed manager of the firm's new Industrial Department in the Minneapolis home office.

Mr. Watson, as manager of the new Industrial Department, will perform engineering, project steering and developmental duties for the company.

In his work as consulting engineer for Despatch, Mr. Watson has been close to the engineering of large conveyorized finishing systems.

Arnold T. Substad has been appointed controller of the Despatch Oven Company.

Mr. Substad was formerly chief accountant for the Minneapolis-Honeywell Regulator Company and is currently president of the Minneapolis Chapter of the National Association of Cost Accountants.

E. A. Daniels, president of **The Lowe Brothers Company** of Dayton, Ohio, has announced several executive appointments.

Paul H. Harn, who has been treasurer since 1943, has become vice-president and secretary. In his new position he will assist Mr. Daniels in the company's general management.

P. H. Harn

E. W. Fasig

Arnold T. Substad

John Watson

L. L. Hunter

W. C. Rhodes

Edgar W. Fasig, former general superintendent, has assumed the position of vice-president, manufacturing, with responsibility for all technical and production operations.

William C. Rhodes has been named vice-president, sales. He will have complete charge of all phases of sales and marketing. Before his promotion, Mr. Rhodes was sales manager.

Lester L. Hunter, controller, has been appointed treasurer, filling the vacancy left by Mr. Harn. Since joining the firm in 1931, Mr. Hunter has served in various financial capacities, becoming controller in 1943.

Stewart E. Lower, former assistant general superintendent, has been promoted to general superintendent, and will assist Mr. Fasig in general technical and production management.

Emerson J. Shough, formerly cashier, has been appointed to the newly created position of general auditor. He will be in charge of all general accounting.

★ ★ ★

Three organizational changes have been announced by W. G. Frank, president of **American Air Filter Co., Inc. C. A. Pickett,** vice president and general manager of Illinois Engineering Company, an AAF subsidiary, has been named manager of AAF's Sales Department within the Product and Marketing Division. **John J. Willis,** assistant manager of the Heating and Ventilating Products Department of AAF, will transfer to Illinois Engineering Company, Chicago, to become its sales manager and assistant to the general manager. **John W. Frazier,** assistant to the director of sales, has been appointed sales promotion manager.

Mr. Pickett first became associated with the organization in 1921 when, as an agent, he represented Midwest Air Filter Company, and the Herman Nelson Corporation, both predecessors of American Air Filter Company. Later he became Branch and Regional Manager with Herman Nelson. With American Air Filter he was Pacific Regional Manager before moving to Illinois Engineering as general manager and vice president.

★ ★ ★

MacDermid, Incorporated, Waterbury, Connecticut, has announced the appointment of **J. Douglas Patrick** to the position of product development engineer.

For more data circle 236 on Reader Service Card

Telephone collect for free brochure on
STRIPPING COPPER
with
McKeon's "Liquid Sulphur"
Economical, fast, non-electrolytic.
Sulphur Products Co., Inc.
McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

For more data circle 237 on Reader Service Card

WHY
DO YOU ALLOW RAPID WEAR
ON YOUR BUFFING FIXTURES
when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write
for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

For more data circle 238 on Reader Service Card

Under Mr. Patrick's direction, MacDermid product development, originating in the company's research laboratories and tested in the customer service laboratory, will be field tested under production conditions in customer's plants. Mr. Patrick will devote full time to product testing and development in the field, concentrating in the New England area. He brings to the company 16 years of metal cleaning, plating and finishing experience.

Charles E. Bagwell has been named chief engineer of **Hanson-Van Winkle-Munning Co.** In this capacity he will be in charge of all equipment design and engineering for the company's automatic metal finishing machinery and processes.

Mr. Bagwell will be chiefly concerned with advance design concepts for automatic conveyors, continuous plating equipment, electrical rotating equipment, finishing control systems.

John R. Mazza

J. Douglas Patrick

Charles E. Bagwell

H. Don Shockley

The promotion of **John R. Mazza** to manager of manufacturing of the **Bart-Messing Corporation,** Belleville, New Jersey, has been announced by Morris M. Messing, president.

Mr. Mazza's office will be at 155 Manchester Place, Newark 4, New Jersey.

★ ★ ★

Robert N. Lynch has been appointed sales manager of **Industrial Heating Co.,** Detroit, Mich., manufacturer of automated metal treating equipment. Mr. Lynch was formerly sales manager of Park Chemical Co., Detroit, Mich.

★ ★ ★

E. R. Van Cleef, president of the **Olo Paint Corporation,** Cleveland, Ohio, has announced the appointment of **William M. Tomc** as technical director. Mr. Tomc formerly was chief chemist for the Acorn Paint & Chemical Company, Cleveland, Ohio.

H. Don Shockley has been appointed rectifier sales engineer for H-VW-M's west coast district.

In this capacity he will assist in the selling and servicing of H-VW-M rectifiers for metal finishing operations, particularly electroplating and anodizing.

Prior to joining Hanson-Van Winkle-Munning Mr. Shockley was with J. B. Seage, Inc., industrial engineering contractors, serving first as engineer and then chief engineer. During this time he had considerable experience in the installation of electroplating equipment, particularly rectifiers.

★ ★ ★

M. F. Earley has been appointed sales manager of **Sulphur Products Co., Inc.,** Greensburg, Pa. A. Hensel McKeon, president of the company, announced Mr. Earley's promotion.

Dr. Robert J. Rohr has joined the **Magnus Chemical Co., Inc.**, of Garwood, N. J., as midwest regional sales manager. He will be responsible for the administration of Magnus sales and service activities in the Midwest.

Dr. Rohr's academic background and broad experience in the industrial and chemical fields will be utilized to aid users of Magnus cleaners, cleaning equipment, lubricants and finishes.

Dr. R. J. Rohr

George Tatoian

George Tatoian has been appointed sales manager, **Patwin Instruments Division, The Patent Button Company,** Waterbury, Connecticut.

Mr. Tatoian was formerly chemical engineer on the research staff of The Patent Button Company.

★ ★ ★

Fred S. Lange and **Everett H. Knuth** have been appointed regional sales managers for the automotive refinish sales department of **Pittsburgh Plate Glass Company's** Ditzler Color Division in Detroit, Michigan.

Mr. Lange, formerly Ditzler sales representative in the Dayton-Cincinnati-Columbus, Ohio, area, will headquarter in Kansas City, Missouri, where he will supervise Ditzler refinish sales activities in the mid-continent area.

Prior to his appointment, Mr. Knuth served as Ditzler sales representative in upper New York state. In his new capacity Mr. Knuth will be responsible for the division's refinish sales in the northeast territory of the United States.

★ ★ ★

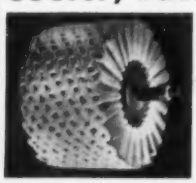
Charles K. Kaiser has been appointed agent for **Pennsalt Chemicals'** corrosion-resistant products in eastern and upper Michigan.

Mr. Kaiser will handle the full line of Pennsalt coatings, cement mortars and interliners for corrosion-proof masonry construction and offer complete professional services in design and specification of chemical-resistant construction and coatings.

★ ★ ★

The Seymour Manufacturing Company, Seymour, Connecticut, has named **Eugene N. Castellano** manager of the company's Bright Nickel department. Mr. Castellano's extensive background in chemistry includes four years of research and production chemistry in the electroplating field.

Cooler, Faster Buffing



with 45° Spoke Buffs
Patented spoke mounting principle maintains best cutting angle of 45° for faster, smoother cutting with less pressure and no streaks. Ventilation from 24 openings.

Write for folder.

GUARANTEED BUFF CO., INC.
20 Vandam St. New York 13, N. Y.

For more data circle **239** on Reader Service Card

"REALLY HELPING"

"I am enjoying your lessons more all the time. In my everyday work I come into contact with just the things you explain so thoroughly and it's really helping me out," writes plating foreman L. J. Melvin, of St. Louis. Why not let this unusual home study course in modern electroplating help *you* out? Write for details, without obligation, to JOSEPH B. KUSHNER, ELECTROPLATING SCHOOL, 115 BROAD STREET, STROUDSBURG 9F, PA.

For more data circle **240** on Reader Service Card

Lawrence W. Cunningham has been appointed Dallas District sales manager for Kelite Corporation, manufacturer of industrial chemicals and steam cleaning equipment.

Mr. Cunningham was formerly associated with Oakite Products, Inc. as technical service representative. His background includes experience in the petroleum and petro-chemical industries.

E. Warren Trogden has been appointed to the sales-service staff of the **Parker Rust Proof Company.** Mr. Trogden has been assigned to the Eastern Region Office at Mountain View, N. J., and will serve accounts in the metropolitan New York area.

He did sales work at Parke, Davis and Company and Cadillac Motor Car Division of General Motors Corporation before coming to Parker.

L. W. Cunningham

Bernard S. Reckseit

Ben F. Edman

E. Warren Trogden

Bernard S. Reckseit has been appointed chief engineer of **Ransohoff, Inc.,** Hamilton, Ohio, manufacturer of metal cleaning and finishing equipment and systems.

Mr. Reckseit joined Ransohoff in 1947 as engineering assistant to the president, and assumes his new position following the death of Nathan Ransohoff, founder, chairman of the board and chief engineer.

★ ★ ★

Heatbath Corporation has announced the appointment of **Gerald Ott** as technical sales representative in eastern Ohio and western Pennsylvania. Mr. Ott will have his headquarters in the company's Cleveland office.

Heatbath has also announced the transfer of **James B. Wheeler** to the Dayton-Indianapolis territory, which includes western Ohio, Indiana and northern Kentucky. Mr. Wheeler has been working in the Cleveland territory for the past year and will continue to supervise sales in that area.

Ben F. Edman, Evanston, Illinois, has been named sales manager for refrigerator and appliance finishes for **The Arco Company,** Cleveland, Ohio.

Mr. Edman brings to The Arco Company a background of experience in original equipment finishes, including ten years' experience with the Nubian Division of The Glidden Company in research, technical service, and sales capacities.

★ ★ ★

Andrew S. March has been appointed Western Division sales manager, **Coated Abrasives Division, Armour and Company,** Alliance, Ohio. His office will be in Chicago.

Armour has also appointed three new sales supervisors: **Robert G. Gallaway, George D. MacMillan,** and **Eugene F. Land.**

Mr. Gallaway will headquarter in Columbus, Ohio; Mr. MacMillan in Baltimore; and Mr. Land in Rockford, Illinois.

J. A. Cairns

J. A. Cairns has been elected to the board of directors of **Allied Research Products, Inc.**, Baltimore manufacturer of the Iridite line of chromate conversion coatings and ARP plating chemicals. Mr. Cairns has been associated with Allied Research since 1948 and in September, 1955, was named sales manager of the marketing subsidiary, Allied Research Sales Corporation, which position he still holds.

★ ★ ★

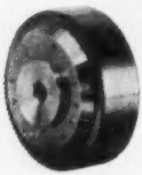
Magnuson Products Corp., Brooklyn, N. Y., has announced the appointment of **Clifford Oates** as sales representative in central New York State.

★ ★ ★

Ben P. Sax, founder of **American Buff Company**, Chicago, has moved from president to board chairman of the firm.

Management of the company now includes **Leonard B. Sax** as president; **Stanley P. Sax**, executive vice-president in charge of sales; **Nathan E. Sax**, vice-president; and **Harold N. Sax**, secretary.

GARDNER SCRATCH THICKNESS GAGE



For measuring the dry thickness of coatings applied to any base such as WOOD, GLASS, METAL, PLASTIC, etc.

Write for description.

GARDNER LABORATORY, INC.

P. O. BOX 5728 PF
BETHESDA 14, MD.

For more data circle **241** on Reader Service Card

Dennis Chemical Company, St. Louis manufacturer of plastisols, specialty coatings and adhesives, has announced the appointment of **G. J. Crowdes** as district manager in charge of the company's Ohio regional office in Cuyahoga Falls, Ohio.

★ ★ ★

Appointment of **Thornton F. Holder** to the post of director of research for **Diamond Alkali Company**, Cleveland, Ohio, has been announced by John A. Sargent, president of the company. The appointment is effective immediately.

Mr. Holder replaces Dr. Albert W. Meyer, who has resigned from his present position as director of exploratory research. Dr. Meyer plans to continue in the field of chemical research. He will announce his plans in the near future.

Thornton F. Holder

Clyde E. Lowe

Clyde E. Lowe has been promoted to Detroit district manager of **Cowles Chemical Company**, Cleveland, Ohio.

Mr. Lowe will be in charge of the sale and servicing of Cowles' alkaline and other metal cleaners, Ty-Bond zinc phosphate metal coatings, and related metal finishing chemicals.

That portion of Mr. Lowe's territory that was located in Cleveland and central Ohio will be absorbed into the territory now being covered by Elmer A. Lord, who will continue to make his headquarters in Cleveland.

Harold R. Suter has been appointed technical director of the J. B. Ford Division of **Wyandotte Chemicals Corporation.** He will coordinate the activities of Ford Division Research, Technical Service, Manufacturing and Engineering departments.

A graduate and ex-faculty member of the Detroit Institute of Technology, Mr. Suter was instrumental in the establishment and operation of a chemical equipment business. He joined Wyandotte Chemicals in 1942 as a research chemist, advanced to director of application research.

Hanson-Van Winkle-Munning Co. has appointed **Gerald F. Turek** sales representative in the company's Milwaukee territory, including Minnesota, Wisconsin, North Dakota and South Dakota.

Mr. Turek will represent the company in the sale of its complete line of metalfinishing supplies, processes and equipment.

Prior to this appointment Mr. Turek was in the Export Sales Department of H-VW-M, where he became familiar with the company's products and processes.

H. R. Suter

Fred Miller

Gerald F. Turek

James Alpine

Automotive Rubber Company, Inc., Detroit, has announced the appointment of **Fred Miller** to the company's sales and engineering staff.

Mr. Miller will represent Arco in New York and the surrounding area and will head the New York office.

★ ★ ★

Egyptian Lacquer Manufacturing Co., Newark, N. J., has announced a policy of rotating men in executive positions, so as to broaden their experience.

Otto Seeger, general manager of the company's South Kearney, N. J., plant, announced the first assignments under the new policy: **Robert E. Mellor** to the position of assistant to the general manager and **William McLeod** to director of purchases, the position formerly held by Mr. Mellor.

James Alpine, Ashtabula, Ohio, has been appointed sales representative for the **Pioneer Rubber Company.** Mr. Alpine will represent the company in Ohio, Michigan, West Virginia, Pittsburgh, and the surrounding territory.

★ ★ ★

The appointment of **Peter Stevens** as sales engineer in the Midwest has been announced by A. Korbelak, sales manager of **Sel-Rex Precious Metals, Inc.,** Belleville, N. J.

Mr. Stevens served as plating consultant and technical service man on the industrial applications of Sel-Rex Precious Metals for three years immediately prior to his current assignment.

His temporary headquarters will be Chicago, although he will report to Sel-Rex's Detroit office.

A. E. S. ANNUAL TRI-STATE REGIONAL MEETING, French Lick-Sheraton Hotel, French Lick, Ind., March 30.

MEETINGS

The **45th Educational Session and Banquet of the Chicago Branch, A.E.S.,** will be held at the Conrad Hilton Hotel, Chicago, on Saturday, January 26, 1957.

The program for the Educational Session, which will start at 2:00 P.M. in the Waldorf Room is as follows:

1. *Gas Plating,* by Malvern J. Hiler, president, The Commonwealth Engineering Company of Ohio.
2. *Structural Materials in Reactor Design,* by Dr. J. H. Monaweck, associate chemical engineer, Argonne National Laboratories.
3. *Hydrogen Embrittlement,* by Dr. L. D. McGraw, assistant chief of the Electrochemical Engineering Division, Battelle Memorial Institute.

The dinner party, including floor show, will be held in the Grand Ballroom at 7:00 P.M.

★ ★ ★

The **Montreal Branch** of the **American Electroplaters' Society,** host branch for the **44th Annual Convention of the A.E.S.,** has announced that plans are being completed for the convention, which will be held June 16-20 at the Sheraton-Mount Royal Hotel in Montreal.

G. R. Davidson of the Montreal Branch, general chairman of the 1957 convention, states that conventioners will have little or no difficulty in entering Canada. No passport is required of a U. S. citizen; a birth certificate or other proof of citizenship is all that is required. Canadian cur-

French Lick-Sheraton Hotel, French Lick, Indiana, will be the scene of the Fourth Annual Tri-State Regional Meeting, American Electroplaters' Society. This meeting is jointly sponsored by the Columbus, Cincinnati, Dayton, Louisville and Indianapolis branches of the A.E.S., and will be held on March 30. The Indianapolis branch is host for the meeting this year. Cocktail party, banquet and floor show will be held after the technical sessions. Ladies will have a luncheon and style show while men attend educational session.

The Sheraton-Mount Royal Hotel, convention headquarters for the 44th Annual Convention of the A.E.S., in Montreal, Canada.

rency is easily secured in exchange for U. S. currency, Mr. Davidson said.

The Ladies' Committee for the 1957 Convention has planned an interesting social program for the wives of conventioners. It includes visits to many points of interest in Montreal. The committee has also allowed ample time for shopping. Montreal has fine department stores, the committee states, and many articles can be secured at an advantageous cost because of preferential tariffs on goods entering Canada.

SOCIETIES

Dr. J. W. Tomecko

Joseph W. Tomecko, of Canadian Industries, Ltd., and a member of the Montreal Club, has been elected president-elect of the **Federation of Paint and Varnish Production Clubs** at the 34th Annual Meeting in Cincinnati. **Howard M. Sholl,** of C. M. Athey Paint Co., and a member of the Baltimore Club, has been re-elected treasurer for another year. The four vacancies on the board of directors were filled by **Ralph Everett,** of the New York Club; **Harry Keifer,** of the New England Club; **William L. Foy,** of the CDIC Club; and **Fred C. Weber,** of the St. Louis Club.

At the December 13 meeting of the Kansas City Branch, A. E. S., Ezra A. Blount, editor of PRODUCTS FINISHING, discussed "Factors Affecting Job Plating Costs." W. H. Deterding is librarian, and Glen Wilson is branch president. (PRODUCTS FINISHING Photo.)

A series of meetings held by companies engaged in the production of industrial finishing equipment has culminated in the formation of a not-for-profit corporation named the **Industrial Equipment Manufacturers' Association.** The final organization meeting took place in Detroit, Michigan, recently.

This trade organization will represent all manufacturers of spray booths, ovens, parts washers, dust-collecting equipment, air-supply systems, paint-handling equipment, electrostatic equipment, and all other manufacturers of products that are used in metal preparation and organic finishing.

The companies that are charter members of the association are as follows:

Newcomb-Detroit Co., Inc.
Peters-Dalton, Inc.
Despatch Oven Co.
J. O. Ross Engineering Corp.
R. C. Mahon Co.
George Koch Sons, Inc.
Spra-Con Co.
B & S Fabricators Co.
Schmieg Industries, Inc.
C. A. Dauer Co.
Foundry Equipment Co.
N. Ransohoff, Inc.
Gallagher-Kaiser Co.
Metalwash Machinery Co.
Burdett Manufacturing Co.

The following officers and directors were elected for the year 1956-57: president and director, **John Harrison,** vice-president of The Spra-Con Co. of Chicago; vice-president and director, **William Hurdlein,** R. C. Mahon Co.; vice-president and director, **C. J. Schmidt,** J. O. Ross Engineering Corp.; secretary and director, **A. L. Newcomb,** Newcomb-Detroit Co., Inc.; treasurer and director, **Robert L. Koch,** George Koch Sons, Inc.

R. Richards, Peters-Dalton, Inc., was also elected a member of the board of directors.

Under the charter granted to the

Officers of the Detroit Branch, A.E.S., met with speakers for dinner prior to the Annual Meeting on Nov. 30. Shown (left to right) are: Patrick J. Driscoll, Udylite Corp.; H. E. Head, Chrysler Corp., 2nd vice president of A.E.S.; Dr. Samuel Heiman, president of A.E.S.; J. D. Thomas, General Motors Research Staff; A. Mendizza, Bell Telephone Laboratories; Frank Clifton, GM.C. (retired); Manuel Ben, General Motors Research Staff; Howard J. McAleer, Formax Mfg. Co., president of the Detroit Branch; Donald C. Austin, Chrysler Corp.; Edward J. Kubis, Wyandotte Chemicals Corp.; Carl Durbin, Chrysler Corp.; Fred J. Brune, Chrysler Corp.; Fred E. Olmstead, Studebaker-Packard Corp.; John F. Siefen, Siefen Compounds, Inc.; Robert C. Trees, Udylite Corp. Full report on the meeting's technical sessions begins on page 28. (PRODUCTS FINISHING Staff Photograph.)

association by the State of Illinois Corporation Department, the purposes of the organization are as follows:

(a) To promote the general welfare of the industry and, without limitation to the generality of the foregoing, encourage high criteria of excellence in engineering, safety, and industry hygiene.
(b) To improve its service to the public.
(c) To cooperate with government officials in furthering the national welfare.
(d) To carry out other activities recognized as lawful for trade associations.

Mandel L. Anixter of the law firm of Chapman, Anixter & Delaney was appointed counsel and executive secretary of the association, which will have its main offices in Chicago, Ill.

TRAINING COURSES

New York University has announced that **Dr. Myron A. Coler,** consulting engineer and technical director of the Markite Company, New York, and **Elias Singer,** technical director of the Troy Chemical Company, New York, will teach a course on the **"Fundamentals of Paint, Varnish, and Lacquer Technology"** during the 1957 spring semester at New York University's Division of General Education. First class meeting will be held February 6.

A second surface technology course, a seminar on **"New Developments in Organic Finishes,"** will be offered on Tuesday evenings beginning February 5. Dr. Coler, Mr. Singer, and **Sidney Lauren,** chemist in the finishes section of the Johns Manville Research Center, Manville, N. J., are the instructors for the seminar.

Further information can be obtained from the Division of General Education, New York University, One Washington Sq. N., New York 3, N. Y.

NECROLOGY

S. Whitfield Quisenberry, supervisor of maintenance sales in the **Du Pont Company's** Finishes Division, died in Wilmington, Delaware, of coronary thrombosis.

Well known as an expert on the scientific use of color, Mr. Quisenberry advocated the scientific use of color to create better and more comfortable seeing conditions.

★ ★ ★

Cecil E. Brigham, of Great Neck, N. Y., died suddenly on September 5. He was recognized as an authority on selenium rectification for the electroplating field. For many years his work was prominent in radio-electronics.

For twenty-one years Mr. Brigham occupied a high position in the International Telephone and Telegraph Company. He joined the Wesley Block Corporation in 1942. In 1945 he was elected to the office of executive vice-president of the **Richardson-Allen Corporation,** a division of the Wesley Block Company, Inc.

MEETINGS of INTEREST to FINISHERS

Jan. 12. Interim Meeting, A.E.S. Supreme Society, Penn-Sheraton Hotel, Pittsburgh, Pa.

Jan. 26. Chicago Branch Annual Meeting, Conrad Hilton Hotel, Chicago, Ill.

March 25-29. Tenth Western Metal Congress and Metal Exposition, Pan Pacific Auditorium, Los Angeles, Calif.

March 30. Fourth Annual Tri-State Regional Meeting, A.E.S., French Lick-Sheraton Hotel, French Lick, Ind.

Apr. 27. Milwaukee Branch Annual Meeting, Schroeder Hotel, Milwaukee, Wisconsin.

Apr. 27. Third Empire State Regional Meeting, A.E.S., Grand Ballroom, Onondaga Hotel, Syracuse, New York.

Apr. 27. Symposium, "Important Engineering Considerations in the Plating Room," Milwaukee Branch, A.E.S., Hotel Schroeder, Milwaukee, Wisconsin.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

For Free Literature Circle Numbers on Card Inside Front Cover

PRODUCT LITERATURE

44. Rectifiers
Bulletin No. 554, available from Crown Chemical and Engineering Co., 4722 Worth St., Los Angeles 63, Calif., describes various rectifiers, including those with manual or automatic controls and those which allow automatic programming of finishing operations.

45. Roller Coat Painting
Fact file gives case histories of successful roller coat painting of many different products. Gives details on coating machines for individual panels as well as continuous metal strip cleaning, treating and coating lines. Shows how metal can be formed after coating without harming the finish. Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Illinois.

46. Washing Machine Cleaner
Technical bulletin describes properties of alkaline cleaner that can be used in high concentrations without excessive foaming. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

47. Buff Catalog
Catalog shows complete line of buffs, includes information on Churchill Finger Buffs. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

48. Automatic Plating Machine
Lasalco's Cycleflex fully automatic plating and anodizing machine allows cycle to be changed without difficulty. Lasalco, Inc., 2820 LaSalle St., St. Louis 4, Missouri.

49. Chromate Coatings
Information on chromate conversion coatings, which deposit a thin, complex chromate film on the surface of metals. This film is an integral part of the metal. Allied Research Products, Inc., 4004-06 East Monument St., Baltimore 5, Maryland.

50. Tumbling Materials
Catalog of tumbling barrels and tumbling media. Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

51. Automatic Polishing Machines
Catalog of Acme automatic polishing machines. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, (Ferndale), Mich.

52. Corrosion-Proof Floor Surfacing
Complete technical data, sample of Corocrete, a floor surfacing material that protects floors against acids and alkalies. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

53. Automatic Barrel Plating
Automatic barrel plating machine allows more than one type of plating to be performed in the same machine, yet retains advantages of automatic processing. Frederic B. Stevens, Inc., 1814 Eighteenth St., Detroit 16, Mich.

54. Hot Spray Equipment
Bulletin F-286 tells how to reduce overspray and produce a better film at the same time with hot spray. The DeVilbiss Co., Toledo 1, Ohio.

55. Cutting Barrels
Literature gives details on how Hartford's enclosed barrel speeds deburring, descaling and polishing of screw machine parts, stampings and castings. Hartford Steel Ball Co., Inc., 14 Jefferson Ave., West Hartford 6, Conn.

56. Quartz Immersion Heaters
Bulletins give details on several types of quartz immersion heaters for heating acids and alkalies. Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio.

57. Organic Tumbling Compound
Folder gives information on how Organ-Tu liquid organic tumbling compound can help to produce high color and finish in barrel finishing operations. Finger Lakes Chemical Co., Etna, N. Y.

58. Vacuum Metalizing Coils
Booklet entitled "Sylvania Tungsten Coil Products" gives information on coils produced especially for vacuum metalizing. Sylvania Electric Products, Inc., Tungsten and Chemical Div., Towanda, Pennsylvania.

59. Polishing Materials
Catalog gives information on Formax cloth buffs, sisal buffs and buffing compounds. Formax Mfg. Corp., Detroit 7, Mich.

60. Sodium Orthosilicate Cleaner
Detailed information on the use and advantages of Dow Sodium Orthosilicate in cleaning metals contaminated with heavy deposits of buffing and drawing compounds. The Dow Chemical Company, Dept. AL766K, Midland, Mich.

61. Complete Finishing Systems
Catalog A-657 describes the advantages of installing a complete, conveyorized paint finishing system. The R. C. Mahon Co., Detroit 34, Mich.

62. Degreasers
Catalog describes Ramco degreasers, ranging in size from laboratory units to conveyorized machines. Includes data on ultrasonic cleaning machines. Ramco Equipment Corp., 811 Edgewater Rd., New York 59, N. Y.

63. Tumbling Chips
Catalog and chip samples for camparison purposes. Universal Tumbling Supply Co., 14337 Mansfield, Detroit 27, Mich.

64. Liners for Blast Cleaning Equipment
Bulletin No. 332 tells how to get longer life from wear plates and other parts subject to severe abrasion in blast cleaning apparatus by using Pangborn "Wear-Resist" Alloy wear liners. Pangborn Corp., 5000 Pangborn Blvd., Hagerstown, Md.

65. Conveyor Plus Storage
Richards-Wilcox Twin-Trak overhead automatic dispatch systems move materials from one point to another or to a predetermined work station or storage space, as desired. Storage banks may be installed in space that is now wasted, such as under trusses. Bulletin gives details. Richards-Wilcox Mfg. Co., Aurora, Ill.

66. Coated Abrasive Polishing Wheels
Reports on the PG wheel, its advantages and uses. Minnesota Mining & Manufacturing Co., Dept. FH-106, St. Paul 6, Minnesota.

67. Non-Foaming Cleaners
Bulletin No. 73 tells how to clean faster and more efficiently with spray washing compounds that contain a non-foaming wetting agent that puts no restrictions on the concentration of compound used. Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

68. Silicone Products
The 1957 Reference Guide to Dow Corning Silicones. Almost 150 silicone products are described, including several which were developed within the last year. Charts, tables and graphs directly comparing various silicones with other materials. Dow Corning Corp., Dept. 5012, Midland, Mich.

69. Corrosion-Resistant Equipment
Catalog C-14 describes the corrosion-resistant plastic equipment of Haveg Industries, Inc., Wilmington, Delaware. Details Haveg-made equipment: pipes and fittings; valves; fume ducts and fume systems; tanks, towers and accessory supplies; heat exchangers; pressure and vacuum equipment; and agitators. Includes data on chemical-resistant cements, the field construction of plastic equipment, and Haveg's design service. Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Del.

70. Silk Screen Supplies
Information on a complete line of silk screens and inks. Dept. P6, The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill.

71. Fast Stripping
Data sheet gives information on Quick-Strip No. 8, a non-flammable stripper for removing enamels, varnishes and lacquers quickly. Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

72. Liquid Vinyl Plastic Coating
Folder describes properties of Vinylon liquid vinyl plastic coatings, which are formulated to waterproof and corrosion proof roofs, walls, machinery, tanks and equipment. This coating is said to be impervious to oil, gasoline, acids, alkalies, alcohol and salt. Sample of the film produced is included in the folder. Surface Coating Engineers, Inc., 2417 N. Burdick St., Kalamazoo, Mich.

73. Aluminum Pretreatment
Bulletin 1241A gives complete information about the Alodizing process for pretreating aluminum. American Chemical Paint Co., Ambler 14, Pa.

74. Degreaser for Smaller Plants
Complete technical data on the 100 CS degreaser, which is designed to operate efficiently on either a continuous or intermittent basis. Phillips Manufacturing Co., 3457 W. Touhy Ave., Chicago 45, Ill.

75. Paint-Shop Specialties
Folder describes Pennsalt specialties for the paint shop, including booth-protective compounds, cleaning compounds and stripping compounds. Pennsylvania Salt Manufacturing Co., Metal Processing Dept. 376, Three Penn Center Plaza, Philadelphia 2, Pa.

76. Fused-Quartz Immersion Heaters
Bulletin describes, illustrates, gives advantages of and specifications for Clepco Fused-Quartz Immersion Heaters. Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

77. Technical Paper on Bright Silver
An eight-page technical paper describes Silvrex Bright Silver Plating Process. Covers bath make-up and maintenance; anodes, tanks, temperatures; current densities; agitation; plating procedure; and gives a simplified method of removal of solution impurities. This process is said to give a mirror-bright finish directly from the bath through a complete range from flash to extra heavy deposits, and to produce hard, (Brinnell 135) ductile deposits. Sel-Rex Corp., Precious Metals Div., 229 Main St., Belleville, New Jersey.

For Free Literature Circle Numbers on Card Inside Front Cover

For Free Literature Circle Numbers on Card Inside Front Cover

78. Electropolishing Stainless Steel
Describes baths used for electropolishing stainless steels, includes operating instructions for two of these baths. Electro-Glo Co., 1430 S. Talman Ave., Chicago, Ill.

79. Air-Operated Paint Pumps
Bulletin 702 describes Binks air-operated material handling pumps for light materials such as paints and other light-bodied materials. These pumps can be used in pumping paint to one or two spray guns or in a small paint circulating system feeding up to 12 guns. Binks Mfg. Co., 3118-40 Carroll Ave., Chicago 12, Ill.

80. Polishing Head
Data sheet gives full information on the Hammond Model 52-100 Head for polishing, buffing or deburring. This polisher provides 360-degree adjustment for positioning head assembly. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

81. Barrel Finishing Information
A 52-page general catalog of Supersheen barrel finishing equipment. Contains detailed basic material on barrel finishing. Almco Div., Queen Stove Works, Inc., 812 Marshall St., Albert Lea, Minn.

82. Acid-Resistant Liner
Technical data sheet on Amer-Plate 94Y, an acid-resistant lining for tanks and other structures. Amercoat Corp., Dept. EA, 4809 Firestone Blvd., Southgate, California.

83. Fume-Control Systems
Booklet "F" shows typical installations of Kirk & Blum fume-control installations. Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

84. Hot-Sawdust Dryers
Data sheet gives specifications and information on hot-sawdust dryers and polishers and accessory equipment. Speed-D-Burr Corp., 3613-A San Fernando Rd., Glendale 4, Calif.

85. Magnetic Thickness Tester
Details on the use of the Handi-Gage magnetic thickness tester for determining the thickness of plated, hot-dipped and painted coatings on steel. Instrument is about the size of a fountain pen. Platers Research Corp., 59 E. Fourth St., New York 3, N. Y.

86. Metal Preparation
Catalog of materials used in metal cleaning and preparation. Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Mich.

87. Tilting Tumbling Barrels
Information on Globe Tumbling Barrels, including complete specifications and operational details is given in Catalog C-1. Globe Barrel Finishing Equipment Div., Casalbi Co., 546 Wayne St., Jackson, Michigan.

88. Electrocleaner
Information on Lectrite-NF, an electrocleaner formulated for use on nonferrous metals in automatics or batch operation. Wyandotte Chemicals Corp., Dept. 2300, Wyandotte, Mich.

89. Tumbling Barrels
Catalog describes and illustrates various sizes and types of tumbling barrels. The Henderson Bros. Co., 134 S. Leonard St., Waterbury, Conn.

90. Planning to Paint a Pyramid?
Brochure gives information on Epon Resin-based finishes and their chemical and abrasion resistance. Shell Chemical Corp., Chemical Sales Div., 380 Madison Ave., New York 17, N. Y.

91. Composite Bake Metal Primers
Detailed information on a coating system which allows primer and top coat to be baked in one pass through the baking oven. The Egyptian Lacquer Manufacturing Co., Box 444, Newark 1, N. J.

92. Molten Salt Stripping
Details of the Kolene method of stripping paint in a molten salt bath. Process can be used in batch or conveyorized operations. Kolene Corp., 12890 Westwood, Detroit 23, Mich.

93. Recirculating Ovens
Complete data on batch and conveyor-type recirculating baking and drying ovens. W. S. Rockwell Co., 2906 Eliot St., Fairfield, Conn.

94. Electrical Viscosity Control
Information on the Brookfield Viscometer for electrically measuring viscocity quickly and accurately. Brookfield Engineering Laboratories, Inc., Stoughton 11, Mass.

95. Strippable Spray Booth Coating
Information on a strippable coating (for spray booth walls) that permits stripping overspray quickly. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

96. Liquid Handling Equipment
Catalog 452 illustrates and describes the new Graco Powerflo pumps, circulating systems and equipment designed to spray or extrude liquids. Gray Company, Inc., 1023 Sibley St., Minneapolis 13, Minn.

97. One Step Removal
Data on removal of rust, paint, phosphate coatings and other soils with R. & P. Stripper No. 27. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

98. Pre-Cut Spray Masks
Bulletin 160-C gives complete data on use of pre-cut spray masks to speed masking operations. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 12, Wisconsin.

99. White Baking Enamels
Literature contains complete technical data on Appliance White Baking Enamels. Thompson and Company, 1010 Allegheny Ave., Oakmont, Pa.

100. Centrifugal Pumps
Eight-page bulletin gives head, g.p.m. and efficiency graphs for Industrial Centrifugal Pumps. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

101. Manual of Exhaust Hood Designs
Bulletin No. 270-E1 describes and illustrates exhaust hoods and dust collectors for metal finishing and metalworking installations. American Air Filter Co., Inc., Louisville, Ky.

102. Airless Spray Painting
Bulletin explains principles of airless spray painting. Bede Products Corp., Dept. 1, Jackson St., Amherst, Ohio.

103. Masking Tapes
Properties, specifications and application data on a complete line of pressure-sensitive tapes are contained in a 25-page brochure, "Tape It with Behr-cat," available from Behr-Manning, Div. of Norton Co., Dept. PF-12, Troy, N. Y.

104. Degreasers
Data sheet describes and illustrates a complete line of degreasers, from batch types to conveyorized and ultrasonic models. Circo Equipment Co., 51 Terminal Ave., Clark (Rahway), N. J.

105. Non-Destructive Thickness Tester
Information on the Dermitron non-destructive thickness tester, for checking thickness of metals on metals, non-conductors on metals, and metals on non-conductors. Unit Process Assemblies, Inc., 61 East Fourth St., New York 3, N. Y.

106. Scratch Thickness Gage
Information on the Gardner Scratch Thickness Gage. Description, advantageous features, method of use. Measures thickness of dried coatings on any base. Gardner Laboratory, Inc., P.O. Box 5728PF, Bethesda 14, Md.

107. Hot Spray Unit
Information on a hot spray process that uses no moving parts to heat the paint. Air used in atomizing the paint is heated, and it in turn heats the paint. Thermospray Co., Inc., 103 Park Ave., New York 17, N. Y.

108. Paint Pumps
Catalog (Form No. 2625) describes pumps for supplying paint to spray guns. Includes data on continuous recirculating systems, units for pumping abrasive materials. Balcrank, Inc., 42 Disney St., Cincinnati 9, Ohio.

109. Simple Analyses For Solutions
"Simple Methods for Analyzing Plating Solutions" is a 36-page bulletin which discusses analytical principles, use of apparatus and methods for sampling a plating solution. Outlines steps involved in 28 analytical methods for testing nickel, copper, silver and other metal-finishing solutions. Other sections of the bulletin describe equipment, component chemicals of solutions, atomic weights, acid concentrations and electrochemical data. Conversion tables are included. Analytical reagents are listed for brass, cadmium, chromic acid, copper cyanide and sulfate, gold, nickel, silver, tin and zinc plating solutions. Hanson-Van Winkle-Munning Co., Church St., Matawan, New Jersey.

110. Properties of Nickel Alloys
A booklet entitled, "Some Properties of Inco Nickel Alloys at Low Temperatures." Describes the various wrought and cast high-nickel alloys used at low temperatures and arranges data in a useful manner for engineers and designers of equipment. Readers Service Section, The International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.

111. Drum Rotators
Data sheet describes Morse motorized drum rotator for agitating paints and other materials in drums, without opening the drum. Morse Mfg. Co., Inc., 762 W. Manlius St., E. Syracuse, N. Y.

112. What's New for Cleaning Brass and Other Copper Alloys?
Folder explains advantages of using Oakite Composition No. 191 for electrocleaning brass and other copper alloys. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

113. Automatic Airpainting Equipment
Bulletin AAE-9-55 illustrates and describes complete line of automatic spray painting and allied equipment. Paasche Airbrush Co., 1909 W. Diversey Pkwy., Chicago 14, Ill.

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114. Electroplating on Aluminum
A process for electroplating on aluminum is described in Technical Data Sheet No. 13, a usage and instruction sheet. Named the Alumetex Process, the method works equally well on most commercial alloys and may be varied to handle special alloys. MacDermid, Inc., Waterbury 20, Conn.

115. Protect Polished Parts
Folder tells how to avoid costly scratching and marring of highly polished parts by lining baskets and table tops which these parts contact with sound-deadening Neotex mesh matting. Research Products Corp., Dept. 76, Madison 10, Wisconsin.

116. Chips and Compounds
Lists and describes uses for chips and compounds in barrel finishing. Grand Rapids Tumbling Supply Corp., 1750 Elizabeth, N. W., Grand Rapids, Mich.

117. Temperature Controllers
Bulletin 1025-B diagrams operation of the Sarco indicating temperature controller, includes technical specifications for various models. Sarco Co., Inc., Empire State Bldg., New York 1, N. Y.

118. Cold Stripper
Data sheet gives details on Electro Cold Stripper, a paint stripper that is said to remove baked finishes, zinc chromate primers, epoxy finishes, and other organic films easily, without employing heat or mechanical action. Sample is available. Allied Finishing Specialties Co., 2641 W. Grand Ave., Chicago 12, Ill.

119. Germanium Rectifiers
Standard models of Sel-Rex germanium rectifiers, from 50 to 50,000 amperes capacity, in either forced air or completely sealed water cooled design, are illustrated and described. Bart-Messing Corp., Dept. PF, 229 Main St., Belleville, N. J.

120. Advantages of Hot Spray
Revised and enlarged edition of booklet "Why Hot Spray?" Booklet lists the major benefits of hot spray application of finishing materials and explains each benefit in detail. Case histories are cited to illustrate each benefit. The Spee-Flo Co., Dept. PF-30, 720 Polk Ave., Houston 2, Tex.

121. Zinc Plating Additive
Information on McKeon's Zinc Brite, a cleansing and purifying agent for cyanide zinc plating baths. Sulphur Products Co., Inc., McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

122. Vapor Degreasing
Booklet gives the story of new developments in vapor degreasing. Subjects covered include vapor degreasing principles, selection of vapor degreasing cycles, cleaning by ultrasonics, and properties of Triclene D. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept. PF-12, Wilmington 98, Delaware.

123. Rectifiers with Automatic Programming
Data sheet tells how Rapid rectifiers with automatic programming equipment can make any sequence of metal finishing operations completely automatic. Rapid Electric Co., 2877 Middletown Rd., New York 61, N. Y.

124. Plating Test Equipment
Eight-page brochure describes "Rohco Test Equipment For Plating Baths." Describes complete line of instruments and accessories for laboratory and plating tank testing. Among the devices described are Hull Cell miniature plating test units for control of plating baths; Hull Cell Anodes and Cathodes; Hanging Hull Cell for making Hull Cell plating tests under production conditions; Electric Hull Cell Agitator, for reproducing tank operation; Rectifiers for Hull Cell tests; and the Currentester, for detecting and correcting hidden troubles of rectifiers to maintain highest quality production. R. O. Hull & Co., Inc., 1304 Parsons Ct., Rocky River 16, Ohio.

125. Anodes for Chromium Plating
Bulletin R-92 describes Heil round anodes for chromium plating. Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

126. Compressed Air Filter
Information on the Vi-Speed compressed air filter. Includes data on the process by which this filter removes moisture from compressed air lines; capacities; installation; operation; and specifications. Van Products Co., Erie, Pa.

127. Fully Automatic Barrel Plating
Folder contains information on the Udylite fully automatic barrel plating machine. Advantages of the machine are described, photographs of installations included. Udylite Corp., Detroit 11, Mich.

128. Infrared Radiant Panels
Folder describes features of Wiegand Far-Infrared Radiant Panels in paint drying and baking operations. Edwin L. Wiegand Co., 7522 Thomas Blvd., Pittsburgh 8, Pa.

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For more data circle **242** on Reader Service Card

January Advertisers' Index

Allied Finishing Specialties Co. 60
Allied Research Products, Inc. 86, 87
Alsop Engr. Corp. 100
Amercoat Corp. 51
American Chemical Paint Co. 123
American Instrument Co. 63
American Metal Co., Ltd. 76
American Platinum Wks. 10
Better Finishes & Coatings, Inc. 33
Binks Mfg. Co. 88, 89
Blakeslee & Co., G. S. 159
Bond Chemical Products Co. 124
Brady Co., W. H. 128
Buckingham Products Co. 15
Burdett Mfg. Co. 13
Ceilcote Co., Inc. 64
Cincinnati Cleaning & Finishing Mchry. Co. 92
Cincinnati Screen Process Supplies, Inc. 62
Cleveland Process Co. 58
Clinton Co. 113
Cohn Mfg. Co., Inc., Sigmund 82
Cowles Chemical Co. 20
Day & Co., J. B. 106
Despatch Oven Co. 55
Detrex Chemical Industries, Inc., Fourth Cover
Detro Sales Co., Inc. 130
DeVilbiss Co. 34, 35
Diamond Alkali Co. 12
Dixon & Rippel, Inc. 138
Dry Clime Lamp Corp. 74
Electro Glo Co. 84
Enthone, Inc. 4
Esbec Barrel Finishing Corp. 66
Fidelity Chemical Products Corp. 54
Frank, Paul 130
Fusion Metal Coating Co. 142
Gardner Laboratory, Inc. 146
Gasway Corp. 57
General Electric Co. 120, 121
Glidden Co. 16, 17
Globe Barrel Finishing Equip., Div. Casalbi Co. 114
Glo-Quartz Electric Heater Co. 19
Grav-I-Flo Corp. 71
Guaranteed Buff Co., Inc. 144
Hammond Mchry. Builders, Inc. 7, 85
Hanson-Van Winkle-Munning Co. 3
Harshaw Chemical Co. 103
Henderson Bros. Co. 101
Hill Acme Co. 117
Industrial Filter & Pump Mfg. Co. 111
Industrial Filtration Co. 105
International Rustproof Corp. 116
Kalamazoo Tank & Silo Co. 122
Kushner Electroplating School 144
Lanly Co. 142
Lavin & Son, Inc., R. 125
Lowe Bros. Co. 118
MacDermid, Inc. ..... Third Cover
Magnus Chemical Co., Inc. 75
McAleer Mfg. Corp. 132
Mearl Corp. 11
Mechanical Process Co., Inc. 136
Metal & Thermit Corp. 9
Metasurf Co. 56
Michigan Chrome & Chemical Co. 61
Miracle Paint Rejuvenator Co. 136
Morse Mfg. Co., Inc. 140
Naz-Dar Co. 93
Neilson Chemical Co. 8
Newcomb-Detroit Co., Inc. 102
Northwest Chemical Co. 83
Norton Co. 2
Oakite Products, Inc. 1
Oronite Chemical Co. 14
Paasche Airbrush Co. 97
Parker Rust Proof Co. 32
Phillips Mfg. Co. 99
Pioneer Rubber Co. 108
Pittsburgh Plate Glass Co. 80, 81
Promat Div., Poor & Co. 126
Randolph Products Co. 132
Ransburg Electro-Coating Corp. 65
Research Products Corp. 94, 127
Rockwell Co., W. S. 98
Schaffner Mfg. Co., Inc. 109
Sethco Mfg. Co. 140
Sherwin-Williams Co. ..... Second Cover
Sly Mfg. Co., W.W. 79
Solvents & Chemicals Group 59
Solvents Recovery Service, Inc. 138
Speed-D-Burr Corp. 96
Spee-Flo Co. 115
Stevens, Inc., F. B. 18
Stutz Mfg. Co., Geo. A. 6
Sulphur Products Co. 142
Sundstrand Machine Tool Co. 95
Thompson & Co. 78
True Brite Chemical Products Co. 128
Udylite Corp. ..... 64-A, -B
Universal Paint & Varnish Co. 73
Universal Tumbling Supply Co. 62
Wiegand Co., Edwin L. 67

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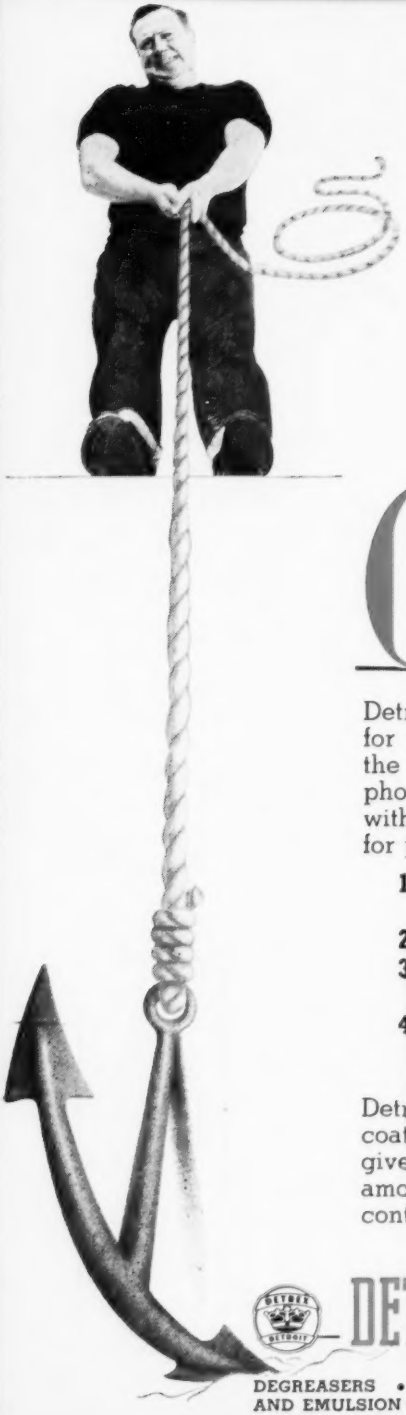

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